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ITU-T Q.86

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OF ITU

(03/93)

GENERAL RECOMMENDATIONS ON TELEPHONE SWITCHING AND SIGNALLING

FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN

STAGE 2 DESCRIPTION FOR CHARGING SUPPLEMENTARY SERVICES

CLAUSE 3 – REVERSE CHARGING (REV)

ITU-T Recommendation Q.86

(Previously "CCITT Recommendation")

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation Q.86, clause 3 was prepared by the ITU-T Study Group XI (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

2 In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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SUMMARY

This Recommendation describes the Stage 2 of the Reverse Charging supplementary service, supported by an ISDN. The Stage 2 descriptions are comprised of the switching functions and signalling information flows. The Reverse Charging supplementary service allows:

a) the *calling user*, on a per call basis, to request that the call be charged to the called party *at call set-up time* and the calling user has the opportunity to accept or reject these charges;

b) the *calling user*, on a per call basis, to request that the call be charged to the called party from a time during the *active phase* of the call and the called party has the opportunity to accept or reject those charges; and

c) the *called user*, on a per call basis, to request to be charged for the call from a time during the *active phase*.

STAGE 2 DESCRIPTION FOR CHARGING SUPPLEMENTARY SERVICES

(Helsinki, 1993)

3 Reverse Charging (REV)

3.1 Scope

This Recommendation defines the Stage 2 of the Integrated Services Digital Network (ISDN) as provided by the telecommunications operators for the Reverse Charging (REV) supplementary service. Stage 2 identifies the functional capabilities and the information flows needed to support the service description. The Stage 2 description also identifies user operations not directly associated with a call (see Recommendation I.130 [1]).

This Recommendation is defined according to the methodology specified in Recommendation Q.65 [2].

This Recommendation does not formally describe the relationship between this supplementary service and the basic call but, where possible this information is included for guidance.

In addition, this Recommendation does not specify the requirements where the service is provided to the user via a private ISDN. This Recommendation does not specify the requirements for the allocation of defined functional entities within a private ISDN; it does however, define which functional entities may be allocated to a private ISDN.

This Recommendation does specify the additional requirements where the service is provided to the user via a Telecommunications network that is not an ISDN.

The Reverse Charging supplementary service is applicable to all telecommunication services.

This Recommendation is applicable to the Stage 3 Recommendation for the Reverse Charging supplementary service, as described in Recommendation I.130 [1].

3.2 References

These references are cited at the appropriate places in the text and the publications are listed hereafter. Dated references, subsequent amendments to, or revisions of any of these publications apply to this Recommendation only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] CCITT Recommendation *Method for the characterization of telecommunication services supported by an ISDN and network*, Rec. I.130, 1988.

[2] CCITT Recommendation *Stage 2 of the method for the characterization of services supported by an ISDN*, Rec. Q.65, 1988.

[3] CCITT Recommendation *Reverse Charging (REV) supplementary service; service description*, Rec. I.256.3.

[4] CCITT Recommendation *Integrated Services Digital Network (ISDN); Basic call handling for circuit switched bearer services; Functional capabilities and information flows*, Rec. Q.71, 1992.

[5] CCITT Recommendation *Vocabulary of terms for ISDNs*, Rec. I.112, 1988.

[6] CCITT Recommendation *Principles of telecommunication services supported by an ISDN and the means to describe them*, Rec. I.210, 1988.

3.3 Definitions

For the purpose of this Recommendation, the following definitions apply:

Integrated Services Digital Network (ISDN): see 2.3/I.112 definition 308 [5].

Service: telecommunication service: see 2.2/I.112 definition 201[5].

Supplementary service: see 2.4/I.210 [6].

3.4 Symbols and abbreviations

For the purpose of this Recommendation the following abbreviations are used:

CC Call Control

CCA Call Control Agent

FE Functional Entity

FEA Functional Entity Action

ISDN Integrated Services Digital Network

LE Local Exchange

PNX Private Network Exchange

REV Reverse Charging

TE Terminal Equipment

3.5 Description

3.5.1 General description

Reverse Charging is a service allowing a called user to be charged for the actual communication, that is for usage-based calls.

There are four cases of Reverse Charging:

- Case A – Reverse Charging requested by the calling user at the call set-up time.
- Case B – Reverse Charging requested by the calling user during the active phase of the call.
- Case C – Reverse Charging for the entire call requested by the called user during the active phase of the call.
- Case D – Reverse Charging unconditional.

3.5.1.1 Case A

This supplementary service allows a calling user, on a per-call basis, to request Reverse Charging at the call set-up time and the called user to accept or reject the charges including in the set-up response. If the called user accepts the request, the network starts charging the called user with notification of acceptance to the calling user and proceeds with the call. If the called user rejects or ignores the request, the network notifies the calling user and disconnects the call.

When a calling user does not explicitly request Reverse Charging, the calling user is charged as usual.

In order to use this service, the originating terminal needs to have the capability for requesting Reverse Charging while the destination terminal needs to have the capability for accepting or rejecting Reverse Charging.

3.5.1.2 Case B

This supplementary service allows a calling user, on a per-call basis, to request Reverse Charging during the active phase of the call and the called user to accept or reject the charges. If the called user accepts the request, the network starts charging the called user from that very moment on with notification of acceptance to the calling user and proceeds with the call.

If the called user rejects or ignores the request, the network notifies the calling user while the existing call remains unaffected and the calling user is charged continuously.

In order to use this service, the originating terminal needs to have the capability for requesting Reverse Charging while the destination terminal needs to have the capability for accepting or rejecting Reverse Charging.

3.5.1.3 Case C

This supplementary service allows a called user, on a per-call basis, to request Reverse Charging during the active phase of the call.

When a called user does not explicitly request Reverse Charging, the calling user is charged as usual.

With this service the usage-based charges are charged to the called user.

In order to use this service, the destination terminal needs to have the capability for requesting Reverse Charging.

3.5.1.4 Case D

Regardless whether a calling/called user requests Reverse Charging or not, all usage-based charges or some of them for selected services are charged to the called user.

With this service the usage-based charges are charged to the called user, even if the calling user is not an ISDN user.

3.5.2 Specific terminology

Throughout the stage 2 description for Reverse Charging, the following terminology will be used:

– *No Transfer mode* – This represents that the charging function is done at the originating side when the No Reverse Charging is invoked.

– *Transfer mode* – This represents that the charging function is done at the destination side when the Reverse Charging is invoked.

3.5.3 Qualification on the applicability to telecommunication services

This service is applicable to all telecommunication services.

3.6 Derivation of the functional model

3.6.1 Functional model description

The functional model used for illustrating the Reverse Charging service procedures is shown in Figure 3-1.

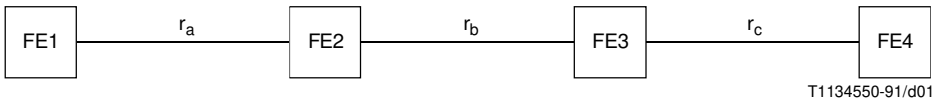


FIGURE 3-1/Q.86

Functional Model for Reverse Charging

3.6.2 Description of the functional entity

The functional entities required by the Reverse Charging service in addition to those of the basic call are as follows:

FE1: Originating Reverse Charging Agent
This represents the entity that requests Reverse Charging service at the originating side.

FE2: Originating Reverse Charging Control Entity
This represents the entity that controls Reverse Charging service at originating side.

FE3: Destination Reverse Charging Control Entity
This represents the entity that controls Reverse Charging service at destination side.

FE4: Destination Reverse Charging Agent
This represents the entity that accepts/rejects/requests Reverse Charging service at the destination side.

Both FE2 and FE3 has only the function that controls Reverse Charging service since the entity collecting the detail of a call for charging will be defined somewhere relating to the basic call control based on the future D-Series Recommendations.

3.6.3 Relationship with the basic service

Relationship functional model for Reverse Charging to basic service is shown in Figure 3-2.

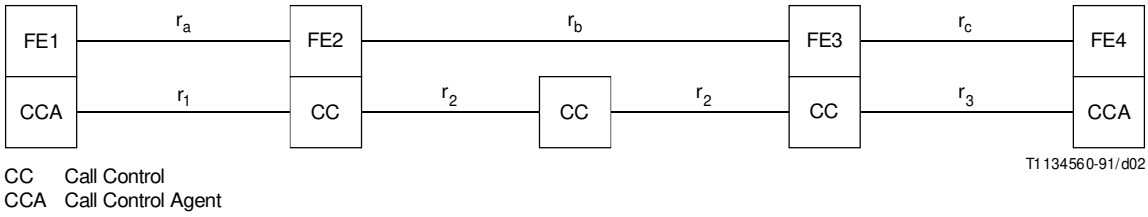


FIGURE 3-2/Q.86
Relationship to a basic service

3.7 Information flows

3.7.1 Information flow diagrams

This subclause contains the information flow diagrams for not only successful cases but also unsuccessful cases (i.e. rejection, ignoring).

Two modes (i.e. No Transfer mode, Transfer mode) are given for each Case (Case A-Case D). No Transfer mode is defined as a basic mode in this service while Transfer mode may be adopted as a service provider option.

3.7.1.1 Information flows for Case A

– Figure 3-3: Successful information flows for Case A (No Transfer mode)

– Figure 3-4: Successful information flows for Case A (Transfer mode)

– Figure 3-5: Unsuccessful information flows for Case A (Reject)

– Figure 3-6: Unsuccessful information flows for Case A (Ignoring)

3.7.1.2 Information flows for Case B

– Figure 3-7: Successful information flows for Case B (No Transfer mode)

– Figure 3-8: Successful information flows for Case B (Transfer mode)

– Figure 3-9: Unsuccessful information flows for Case B (Reject)

– Figure 3-10: Unsuccessful information flows for Case B (Ignoring)

3.7.1.3 Information flows for Case C

– Figure 3-11: Successful information flows for Case C (No Transfer mode)

– Figure 3-12: Successful information flows for Case C (Transfer mode)

3.7.1.4 Information flows for Case D

– Figure 3-13: Successful information flows for Case D (No Transfer mode)

– Figure 3-14: Successful information flows for Case D (Transfer mode)

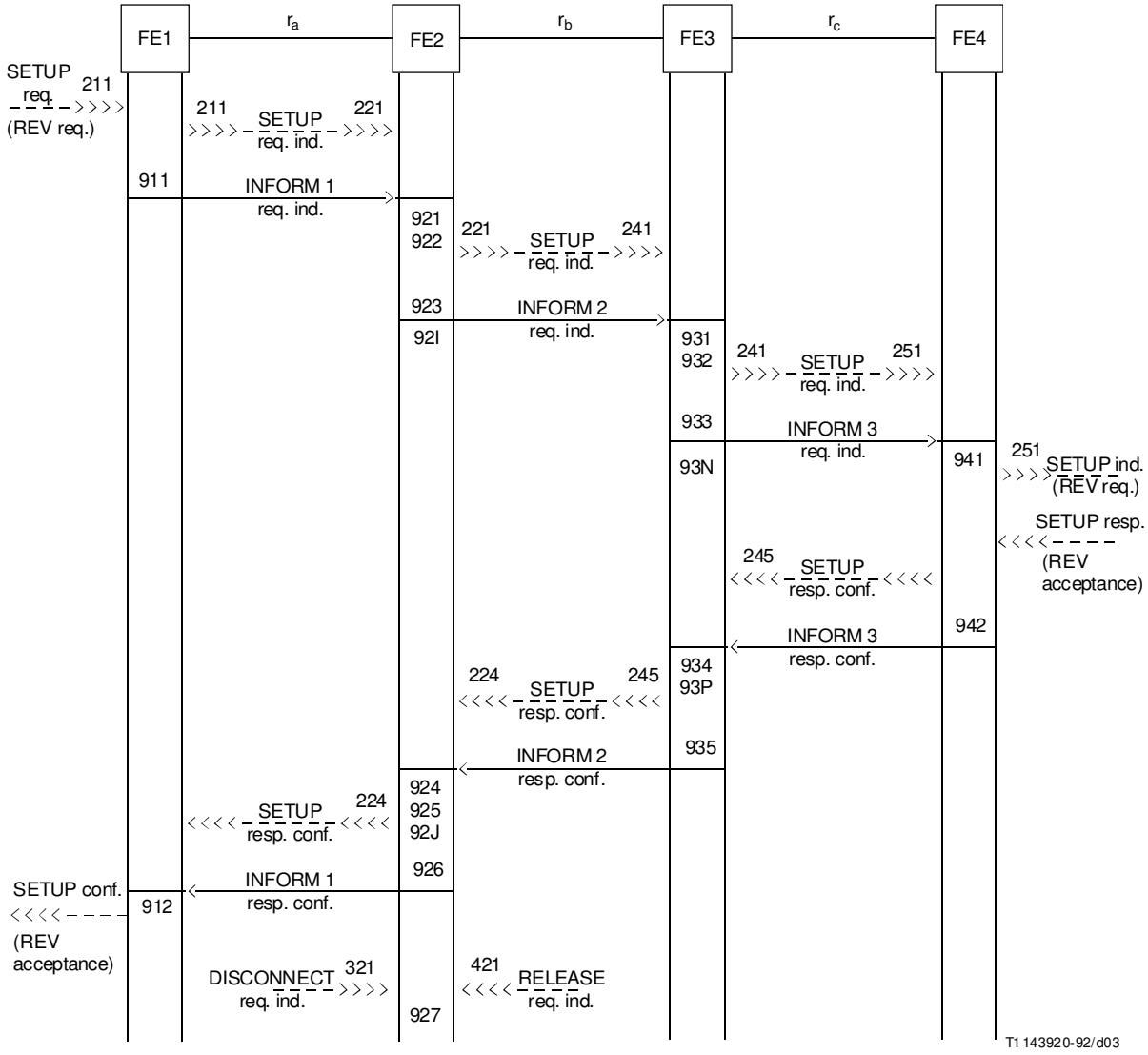


FIGURE 3-3/Q.86

Successful information flows for Case A (No Transfer mode)

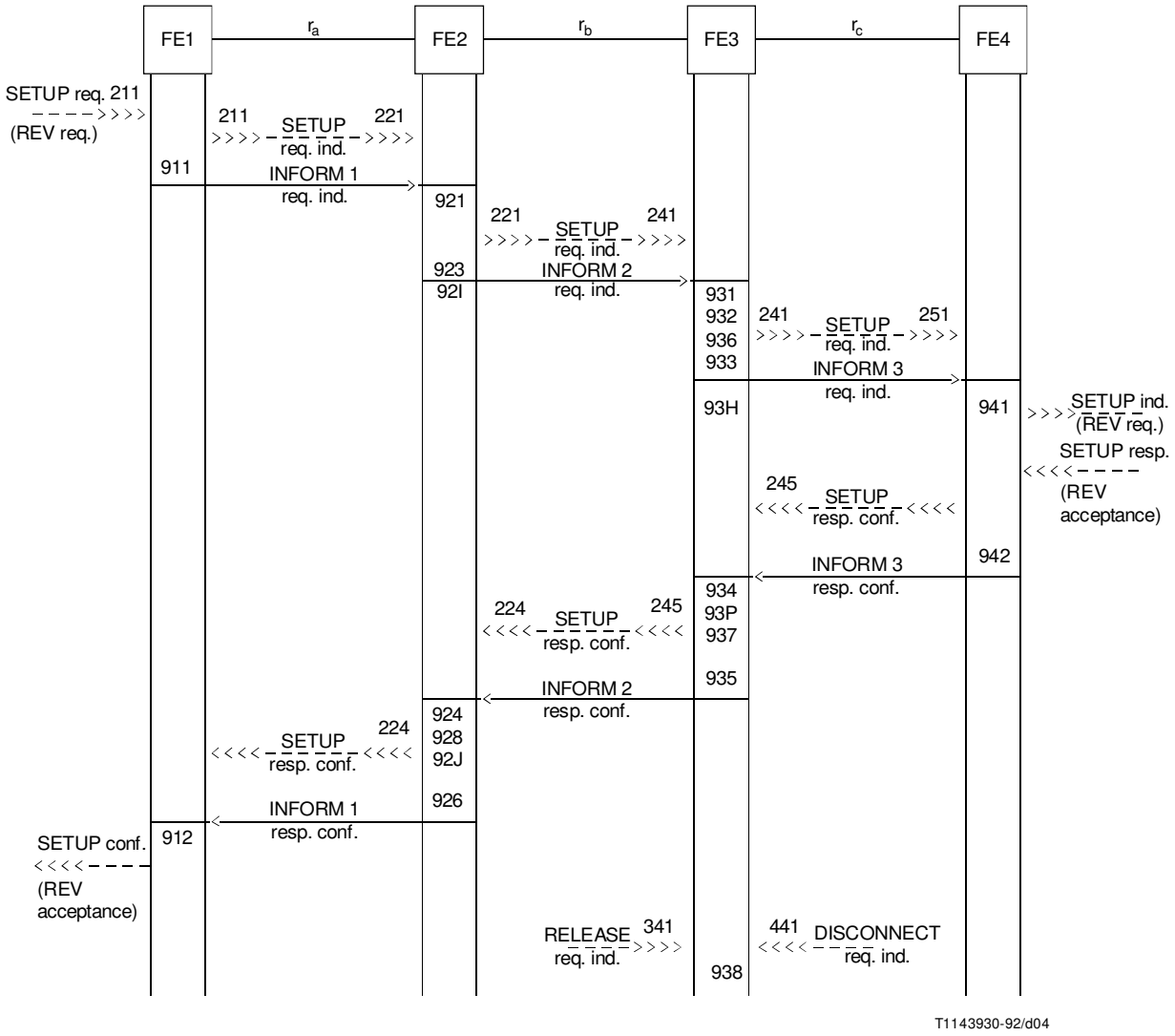
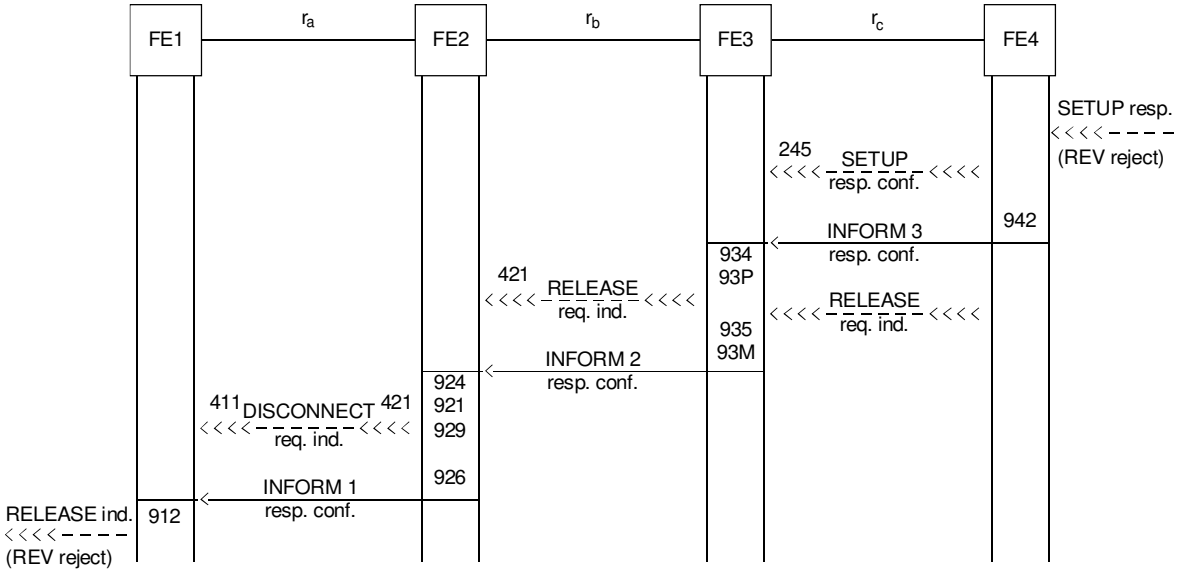
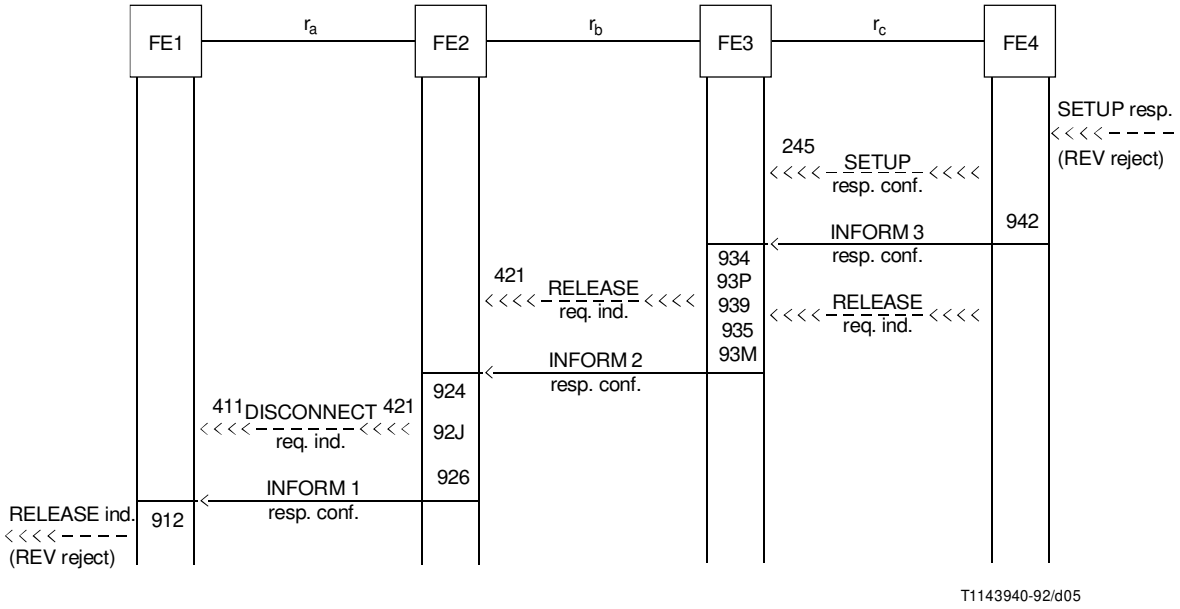


FIGURE 3-4/Q.86

Successful information flows for Case A (Transfer mode)



a) No Transfer Mode

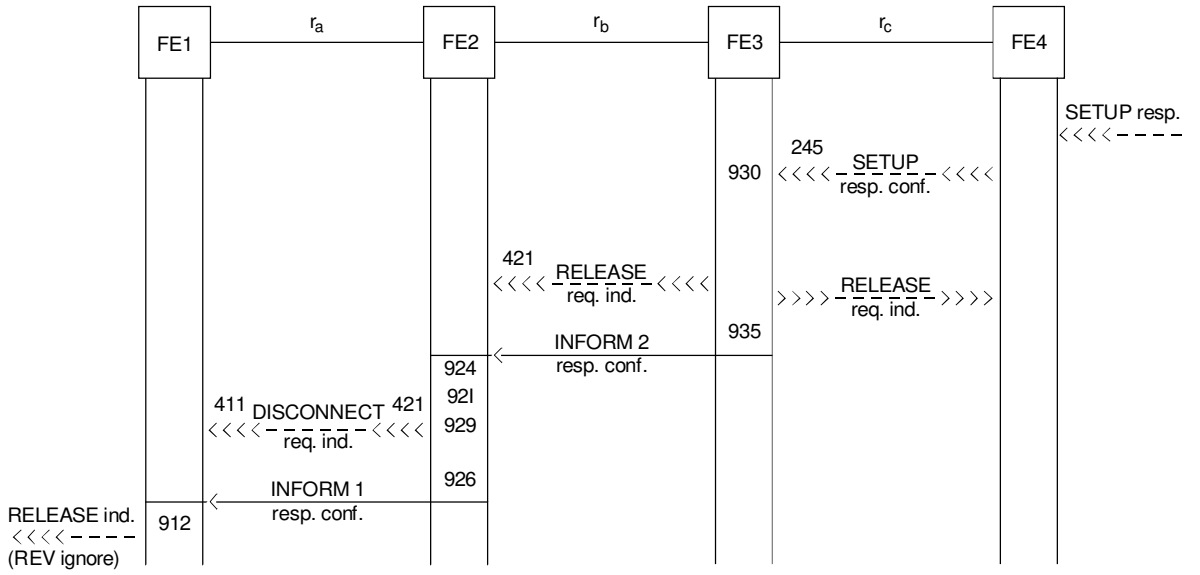


b) Transfer Mode

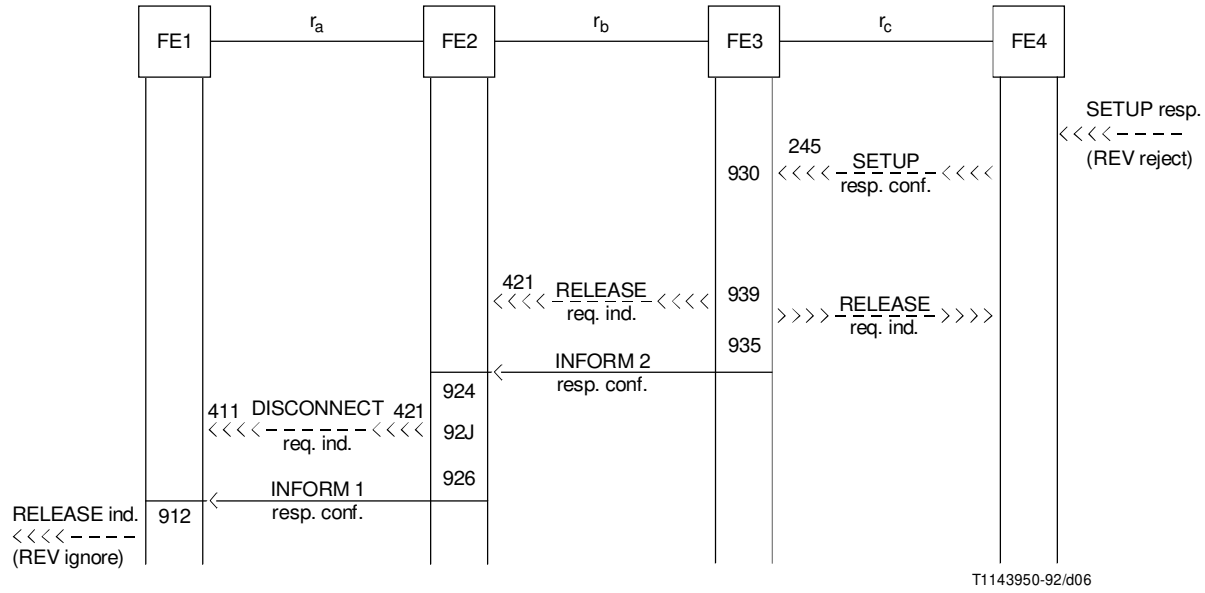
NOTE – These information flows follow the Reverse Charging request information flows which are shown in Figure 3-3 (No Transfer mode) and Figure 3-4 (Transfer mode).

FIGURE 3-5/Q.86

Unsuccessful information flows for Case A (Reject)



a) No Transfer Mode



b) Transfer Mode

NOTE – These information flows follow the Reverse Charging request information flows which are shown in Figure 3-3 (No Transfer mode) and Figure 3-4 (Transfer mode).

FIGURE 3-6/Q.86

Unsuccessful information flows for Case A (Ignore)

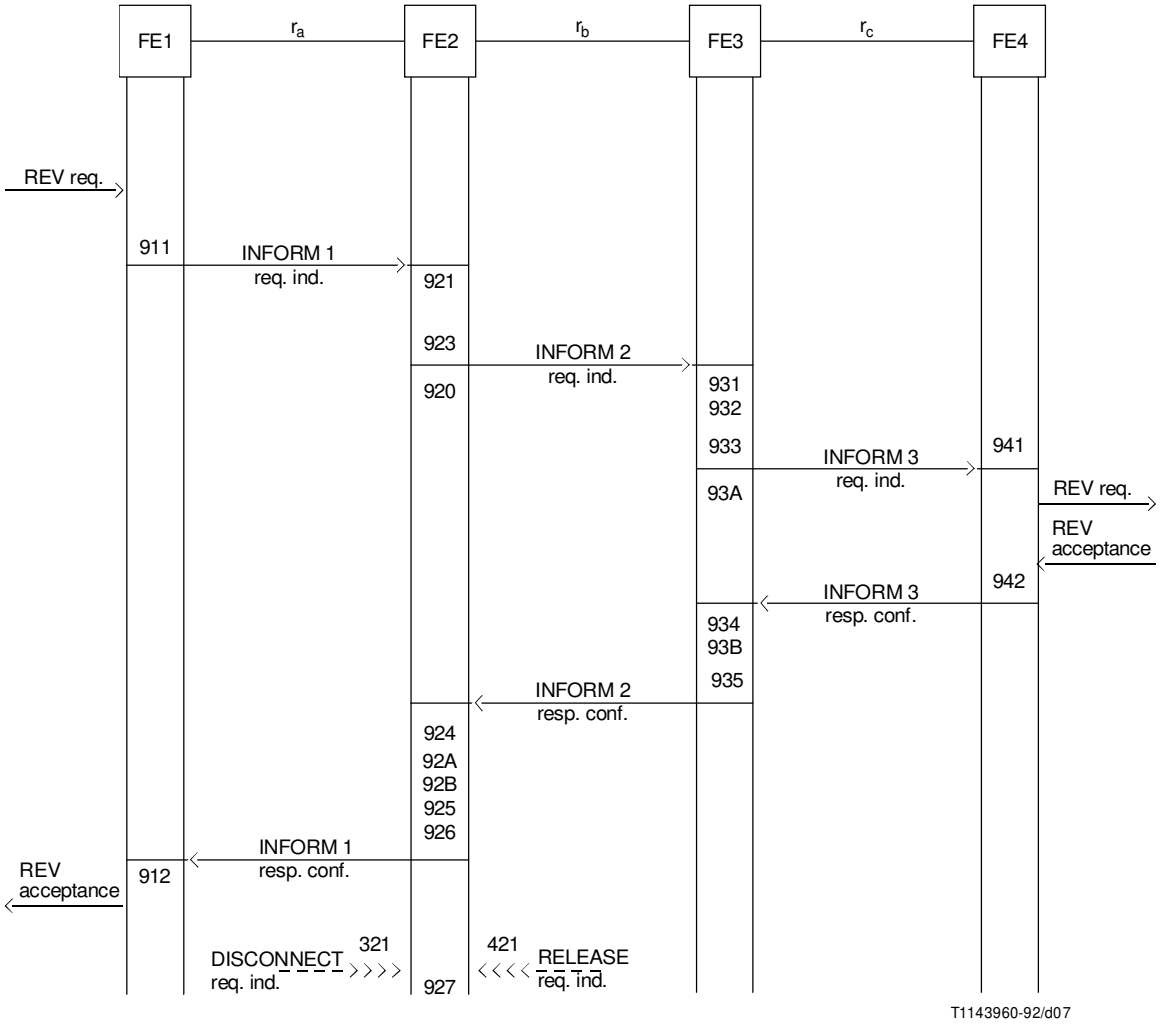


FIGURE 3-7/Q.86

Successful information flows for Case B during active phase of a call (No Transfer mode)

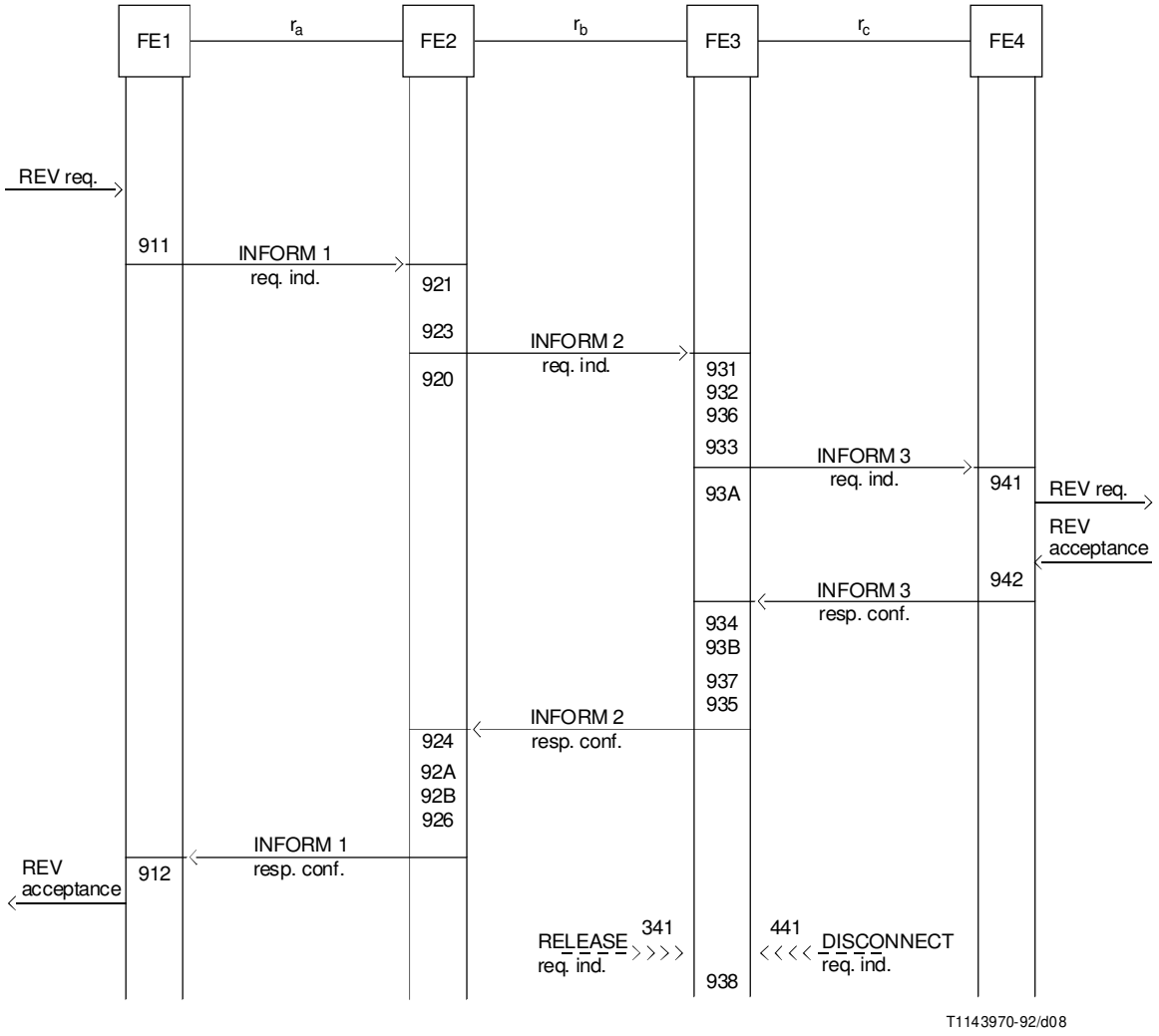
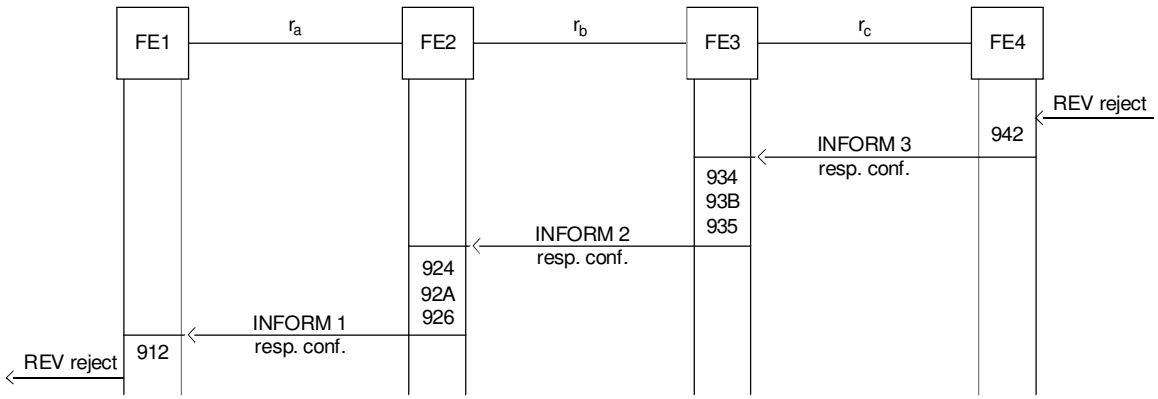
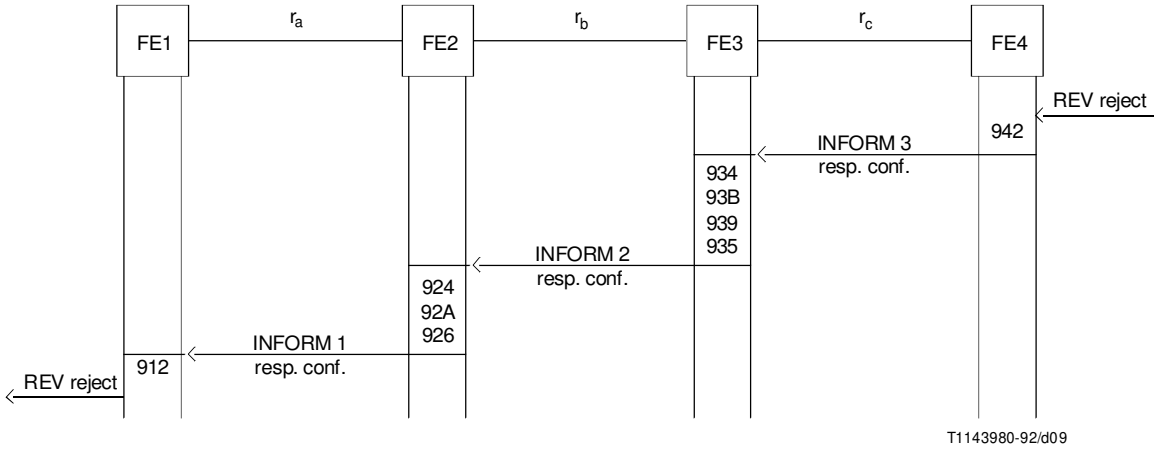


FIGURE 3-8/Q.86

Successful information flows for Case B during active phase of a call (Transfer mode)



a) No Transfer Mode

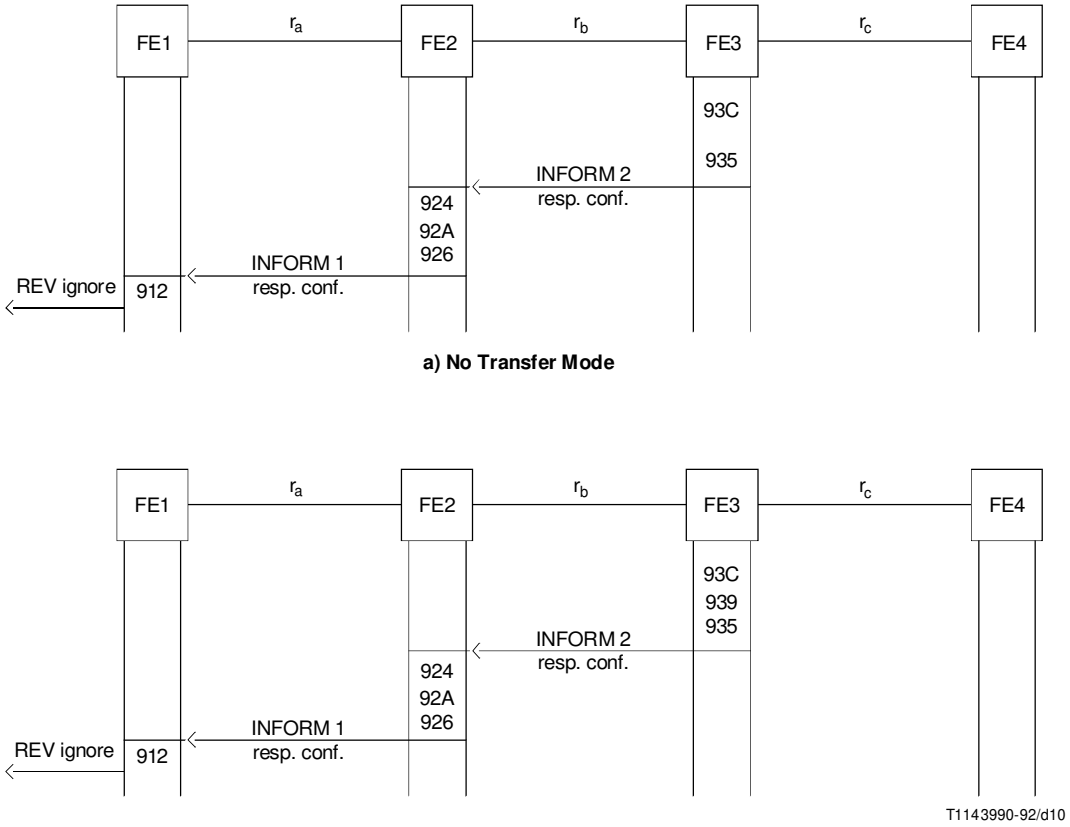


b) Transfer Mode

NOTE – These information flows follow the Reverse Charging request information flows which are shown in Figure 3-7 (No Transfer mode) and Figure 3-8 (Transfer mode).

FIGURE 3-9/Q.86

Unsuccessful information flows for Case B during active phase of a call (Reject)



NOTE – These information flows follow the Reverse Charging request information flows which are shown in Figure 3-7 (No Transfer mode) and Figure 3-8 (Transfer mode).

FIGURE 3-10/Q.86

Unsuccessful information flows for Case B during active phase of a call (Ignore)

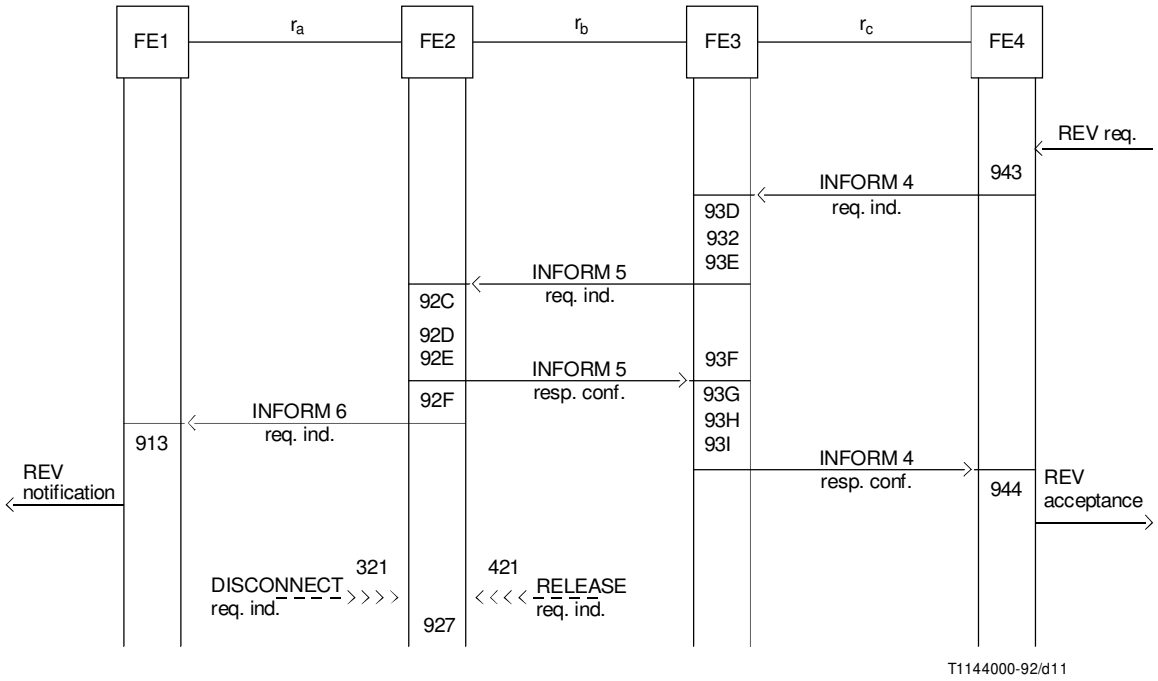


FIGURE 3-11/Q.86

Successful information flows for Case C during active phase of a call (No Transfer mode)

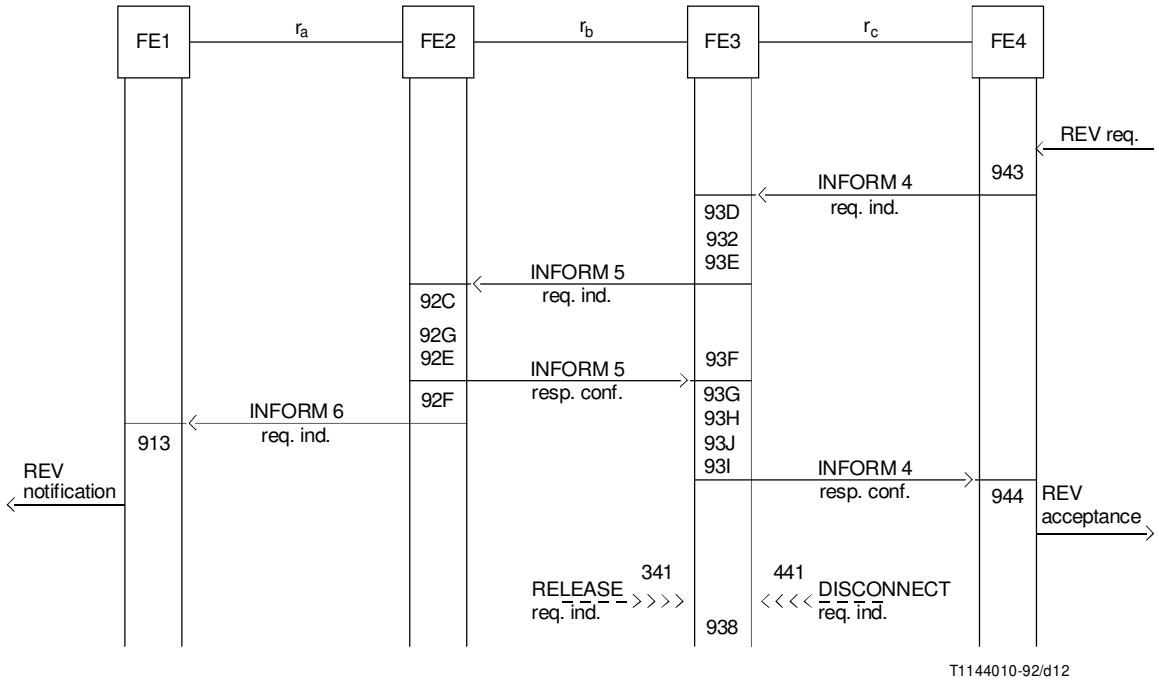


FIGURE 3-12/Q.86

Successful information flows for Case C during active phase of a call (Transfer mode)

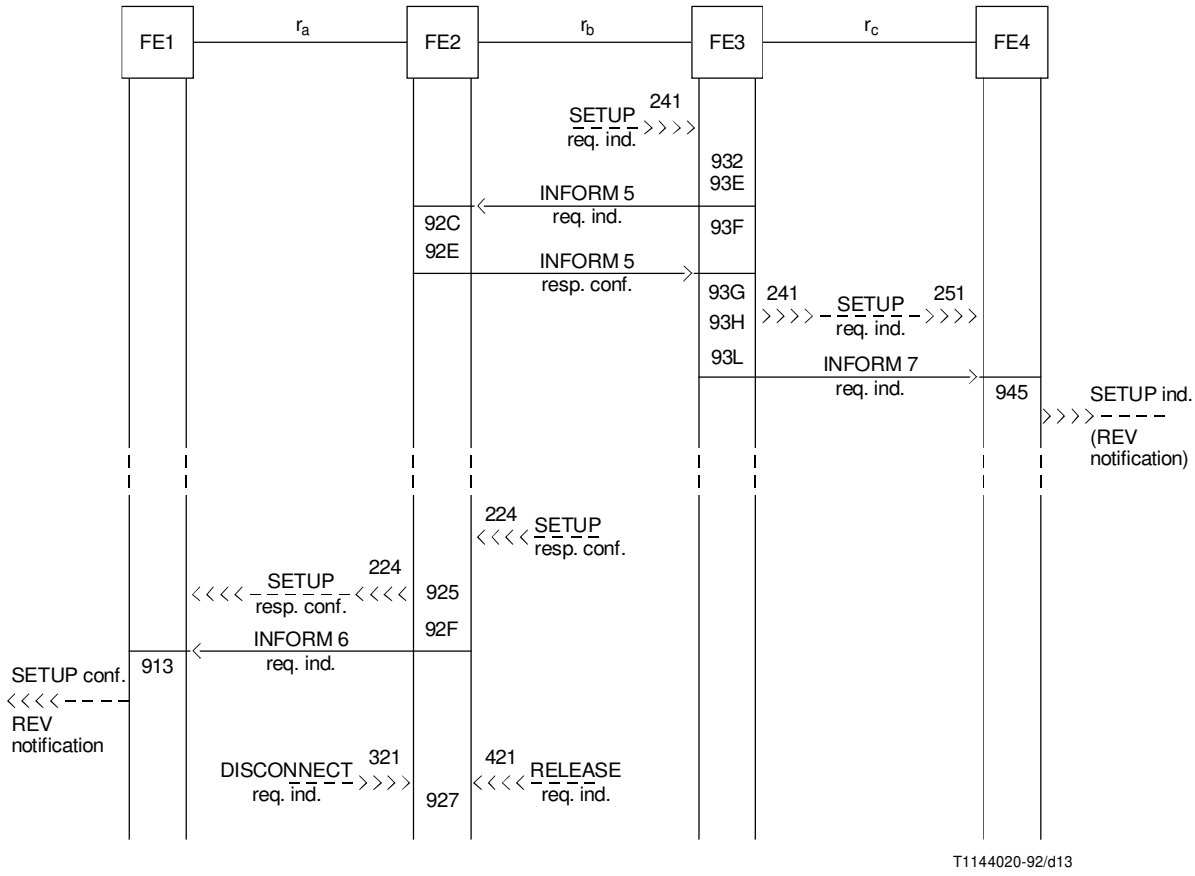


FIGURE 3-13/Q.86

Successful information flows for Case D (No Transfer mode)

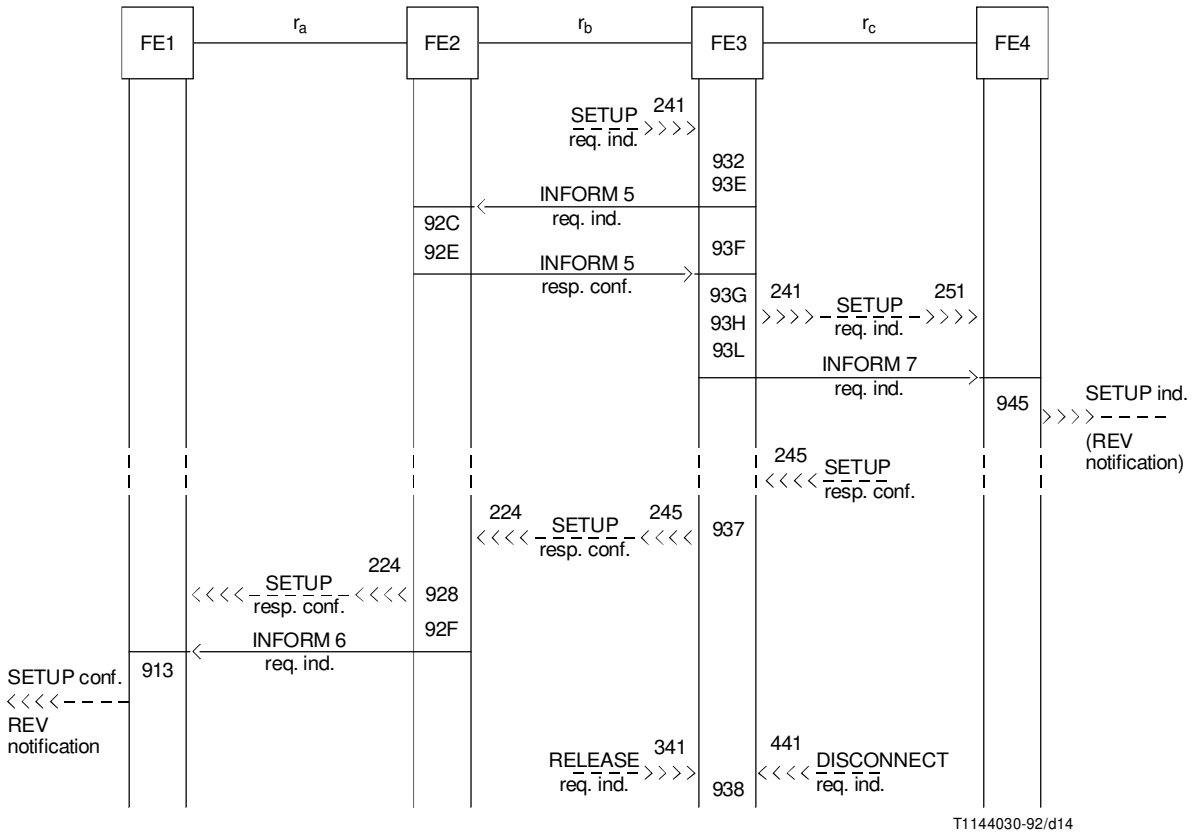


FIGURE 3-14/Q.86

Successful information flows for Case D (Transfer mode)

3.7.2 Definition of Individual Information Flows

3.7.2.1 Relationship r_a

3.7.2.1.1 Contents of INFORM 1 req. ind.

The contents of INFORM 1 req. ind are shown in Table 3-1.

TABLE 3-1/Q.86

The contents of INFORM 1 req. ind.

Parameter	Allowed value	req. ind.
Reverse Charging request	– REV request	Mandatory

3.7.2.1.2 Contents of INFORM 1 resp. conf.

The contents of INFORM 1 resp. conf. are shown in Table 3-2.

TABLE 3-2/Q.86

The contents of INFORM 1 resp. conf.

Parameter	Allowed value	resp. conf.
Reverse Charging result	– accepted – not subscribed – rejected – ignored	Mandatory

3.7.2.1.3 Contents of INFORM 6 req. ind.

The contents of INFORM 6 req. ind. are shown in Table 3-3.

TABLE 3-3/Q.86

The contents of INFORM 6 req. ind.

Parameter	Allowed value	req. ind.
Reverse Charging notification	– REV invoked	Mandatory

3.7.2.2 Relationship r_b

3.7.2.2.1 Contents of INFORM 2 req. ind.

The contents of INFORM 2 req. ind. are shown in Table 3-4.

TABLE 3-4/Q.86

The contents of INFORM 2 req. ind.

Parameter	Allowed value	req. ind.
Reverse Charging control request	– REV control request	Mandatory
Operation mode indicator	– Transfer mode – No transfer mode	Optional (Note 1)
Calling party number (network provide) – Numbering plan identification – Type of number – Number digits	 – ISDN number – National number – International number	Optional (Note 2)

NOTES

1 This information should be included in the case that FE2 requests FE3 to control the call with Transfer mode. If this information is not included in INFORM 2 req. ind., the call should be controlled by No Transfer mode.

2 This information is included in the case of Transfer mode.

3.7.2.2.2 Contents of INFORM 2 resp. conf.

The contents of INFORM 2 resp. conf. are shown in Table 3-5.

TABLE 3-5/Q.86

The contents of INFORM 2 resp. conf.

Parameter	Allowed value	resp. conf.
Reverse Charging result	see 3.7.2.1.2	Mandatory
Operation mode indicator	– Transfer mode – No transfer mode	Optional (Note 1)
Called party number for normal charging – Numbering plan identification – Type of number – Number digits	 – ISDN number – National number – International number	Optional (Note 2)

NOTES

1 This information shall be included in the case that FE2 requests FE3 to control the call with Transfer mode.

2 This information is included when the request for Case B on No Transfer mode has been accepted.

3.7.2.2.3 Contents of INFORM 5 req. ind.

The contents of INFORM 5 req. ind. are shown in Table 3-6.

TABLE 3-6/Q.86

The contents of INFORM 5 req. ind.

Parameter	Allowed value	req. ind.
Reverse Charging control request	– REV control request	Mandatory
Operation mode indicator	– Transfer mode – No transfer mode	Optional (Note 1)
Called party number for normal charging – Numbering plan identification – Type of number – Number digits	 – ISDN number – National number – International number	Optional (Note 2)

NOTES

1 This information should be included in the case that FE3 requests FE2 to control the call with Transfer mode. If this information is not included in INFORM 5 req. ind., the call should be controlled by No Transfer mode.

2 This information is included in the case of No Transfer mode.

3.7.2.2.4 Contents of INFORM 5 resp. conf.

The contents of INFORM 5 resp. conf. are shown in Table 3-7.

TABLE 3-7/Q.86

The contents of INFORM 5 resp. conf.

Parameter	Allowed value	resp. conf.
Reverse Charging control result	– accepted – rejected	Mandatory
Operation mode indicator	– Transfer mode – No transfer mode	Optional (Note 1)
Calling party number (network provide) – Numbering plan identification – Type of number – Number digits	 – ISDN number – National number – International number	Optional (Note 2)
Duration time		Optional (Note 3)

NOTES

1 This information shall be included in the case that FE3 requests FE2 to control the call with Transfer mode.

2 This information is included when the request for Case C/Case D on Transfer mode has been accepted.

3 This information is included when the request for Case C on Transfer mode has been accepted.

3.7.2.3 Relationship r_c

3.7.2.3.1 Contents of INFORM 3 req. ind.

See 3.7.2.1.1

3.7.2.3.2 Contents of INFORM 3 resp. conf.

The contents of INFORM 3 resp. conf. are shown in Table 3-8.

TABLE 3-8/Q.86

The contents of INFORM 3 resp. conf.

Parameter	Allowed value	resp. conf.
Reverse Charging result	– accepted – rejected	Mandatory

3.7.2.3.3 Contents of INFORM 4 req. ind.

See 3.7.2.1.1

3.7.2.3.4 Contents of INFORM 4 resp. conf.

The contents of INFORM 4 resp. conf. are shown in Table 3-9.

TABLE 3-9/Q.86

The contents of INFORM 4 resp. conf.

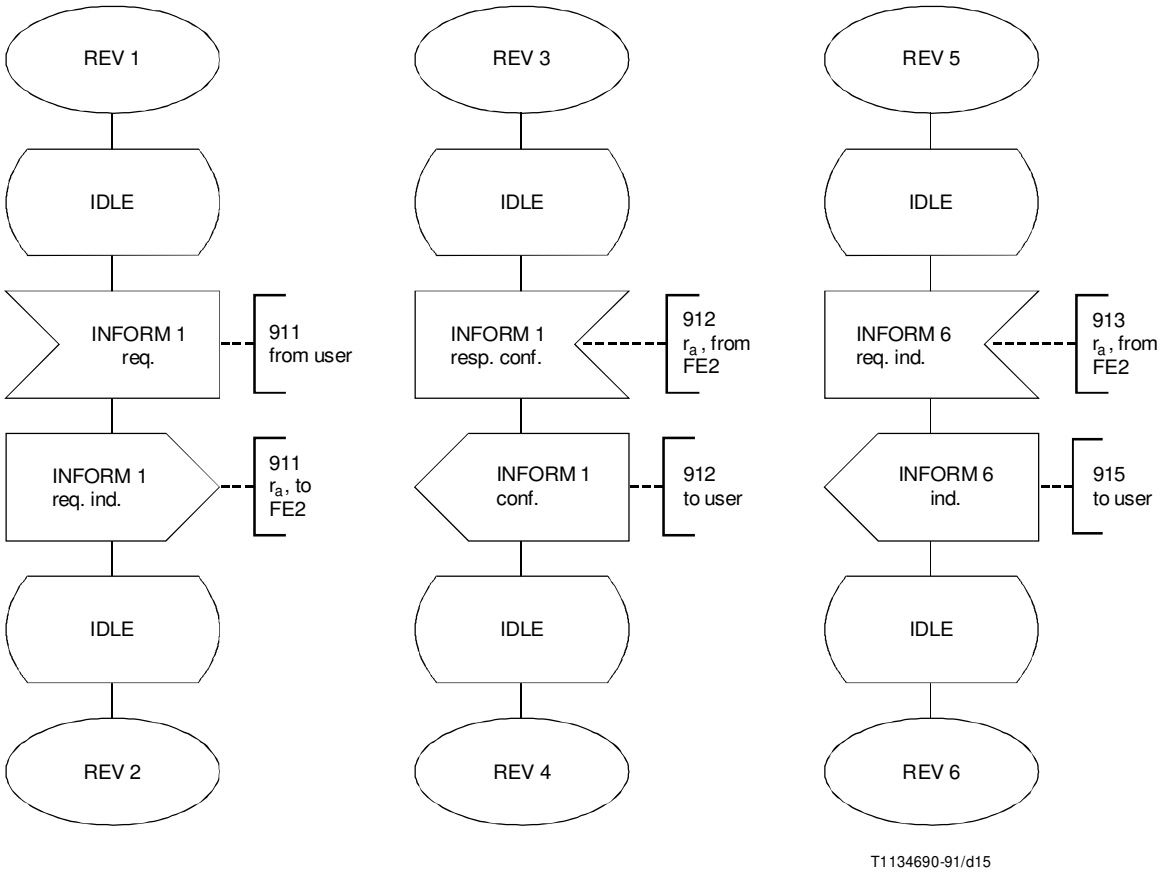
Parameter	Allowed value	resp. conf.
Reverse Charging result	– accepted – not subscribed – rejected	Mandatory

3.7.2.3.5 Contents of INFORM 7

See 3.7.2.1.3

3.8 SDL diagrams for functional entities

See Figures 3-15 to 3-18.



NOTES

1 REV 1 and REV 2:

a) break the basic call transition between connectors S1/1 and S1/2 (see Recommendation Q.71 [4]), in the case of Case A request; or

b) break the basic call between connectors S1/REV 1 and S1/REV 2 (see Recommendation Q.71 [4]), in the case of Case B request.

2 REV 3 and REV 4:

a) break the basic call transition between connectors S1/21 and S1/22 (see Recommendation Q.71 [4]), in the case of Case A response (acceptance); or

b) break the basic call transition between connectors S1/23 and S1/24 (see Recommendation Q.71 [4]), in the case of Case A response (rejection); or

c) break the basic call between connectors S1/REV 1 and S1/REV 2 (see Recommendation Q.71 [4]), in the case of Case B response (both acceptance and rejection)

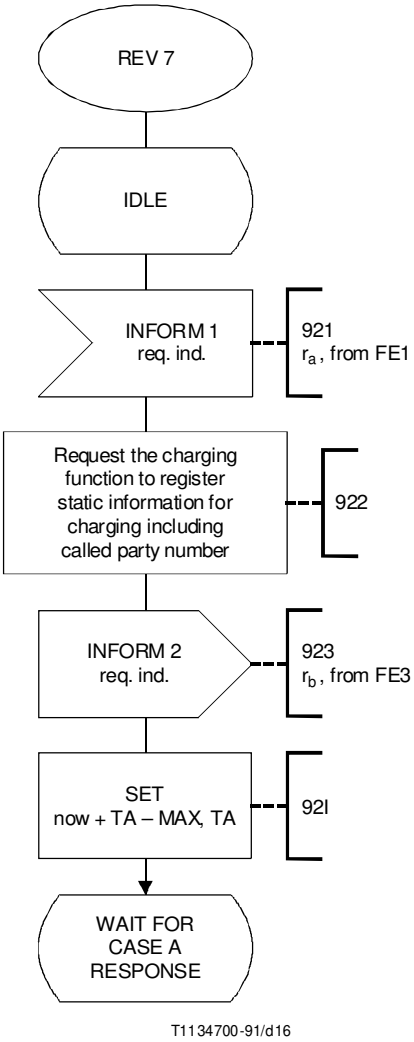
3 REV 5 and REV 6:

a) break the basic call between connectors S1/REV 1 and S1/REV 2 (see Recommendation Q.71 [4]), in the case of Case C notification; or

b) break the basic call transition between connectors S1/21 and S1/22 (see Recommendation Q.71 [4]), in the case of Case D notification.

FIGURE 3-15/Q.86

REV. FE1



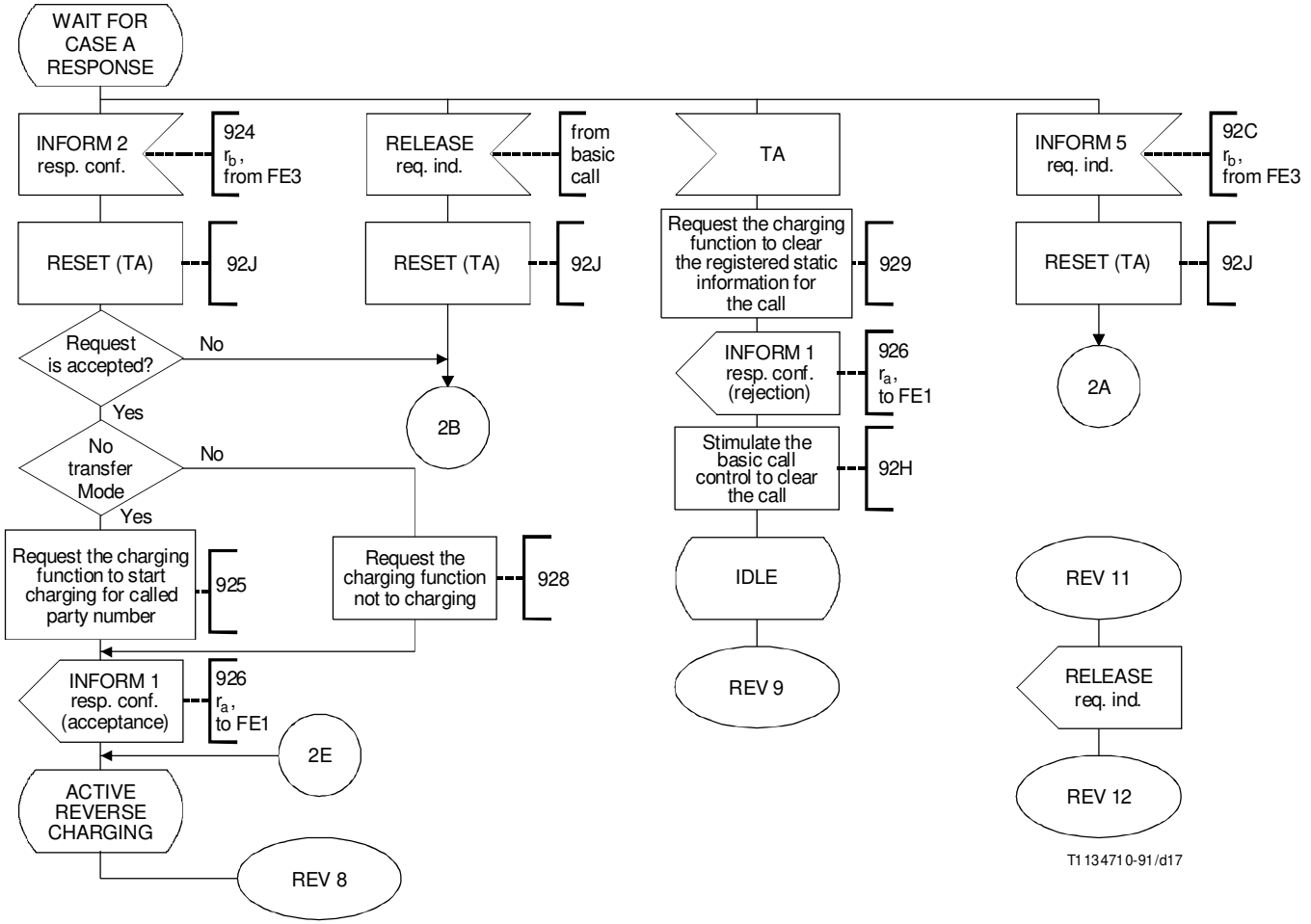
NOTES

1 REV 7 is connected to the basic call connector S2/1 (see Recommendation Q.71 [4]), in the case of Case A request.

2 TA is the same as that of basic call procedure.

FIGURE 3-16/Q.86 (sheet 1 of 8)

REV. FE2



NOTES

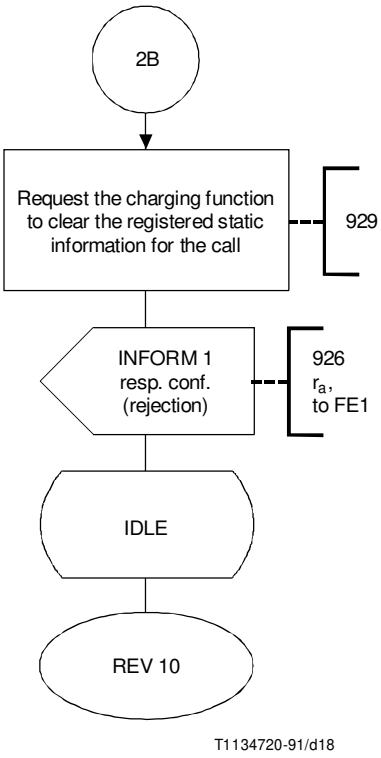
1 REV 8 is reconnected to the basic call connectors S2/26 or S2/16 (see Recommendation Q.71 [4]), in the case of Case A response.

2 REV 9 is reconnected to the basic call connector S2/34 (see Recommendation 71 [4]), in the case of Case A response.

3 REV 11 and REV 12 break the basic call transition between connectors S2/35 or S2/36, or S2/37 and S2/38 (see Recommendation Q.71 [4]), in the case of no Case A response.

FIGURE 3-16/Q.86 (sheet 2 of 8)

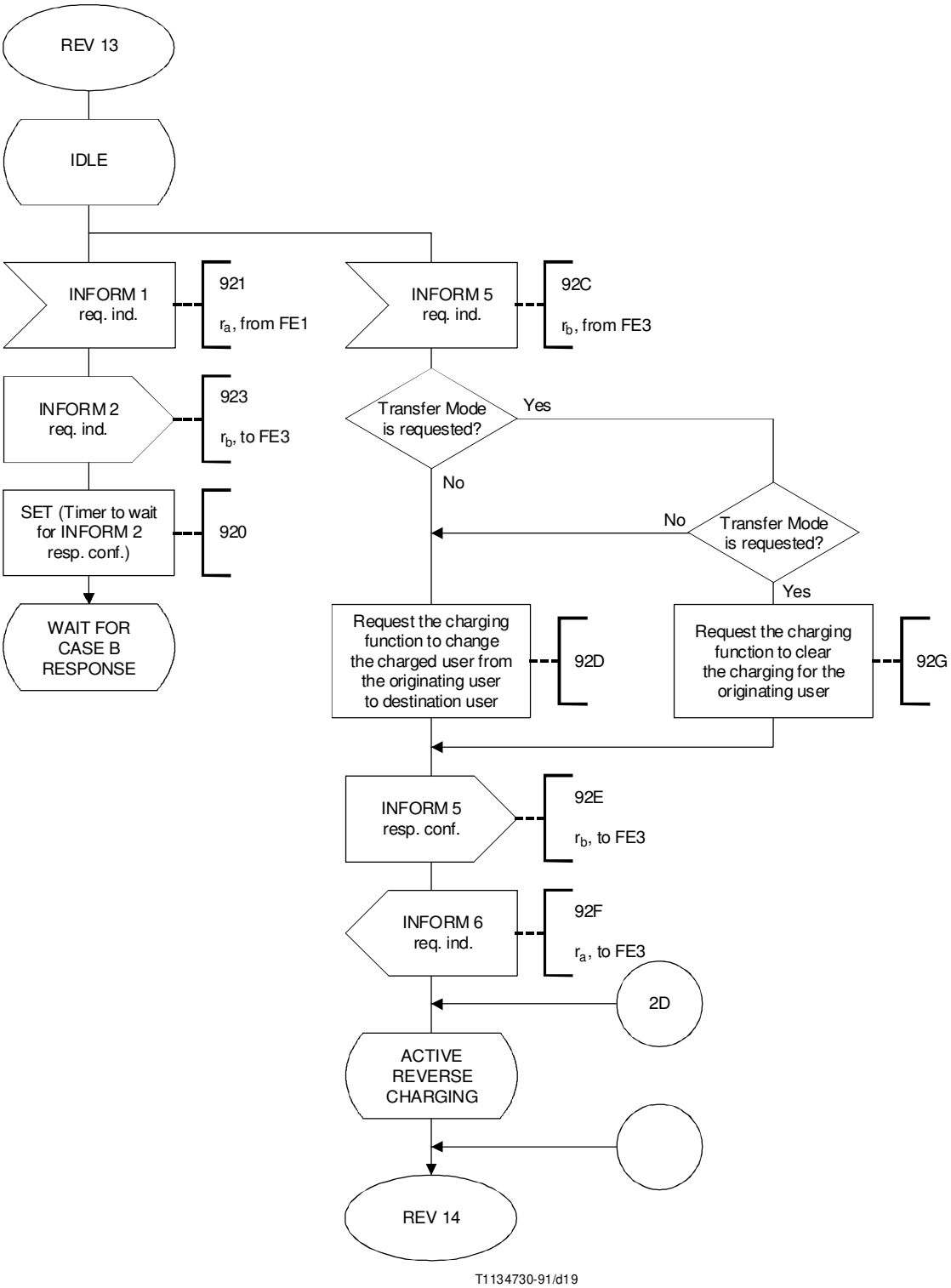
REV. FE2



NOTE – REV 10 is reconnected to the basic call connectors S2/36 or S2/38 (see Recommendation 71 [4]), in the case of Case A response.

FIGURE 3-16/Q.86 (sheet 3 of 8)

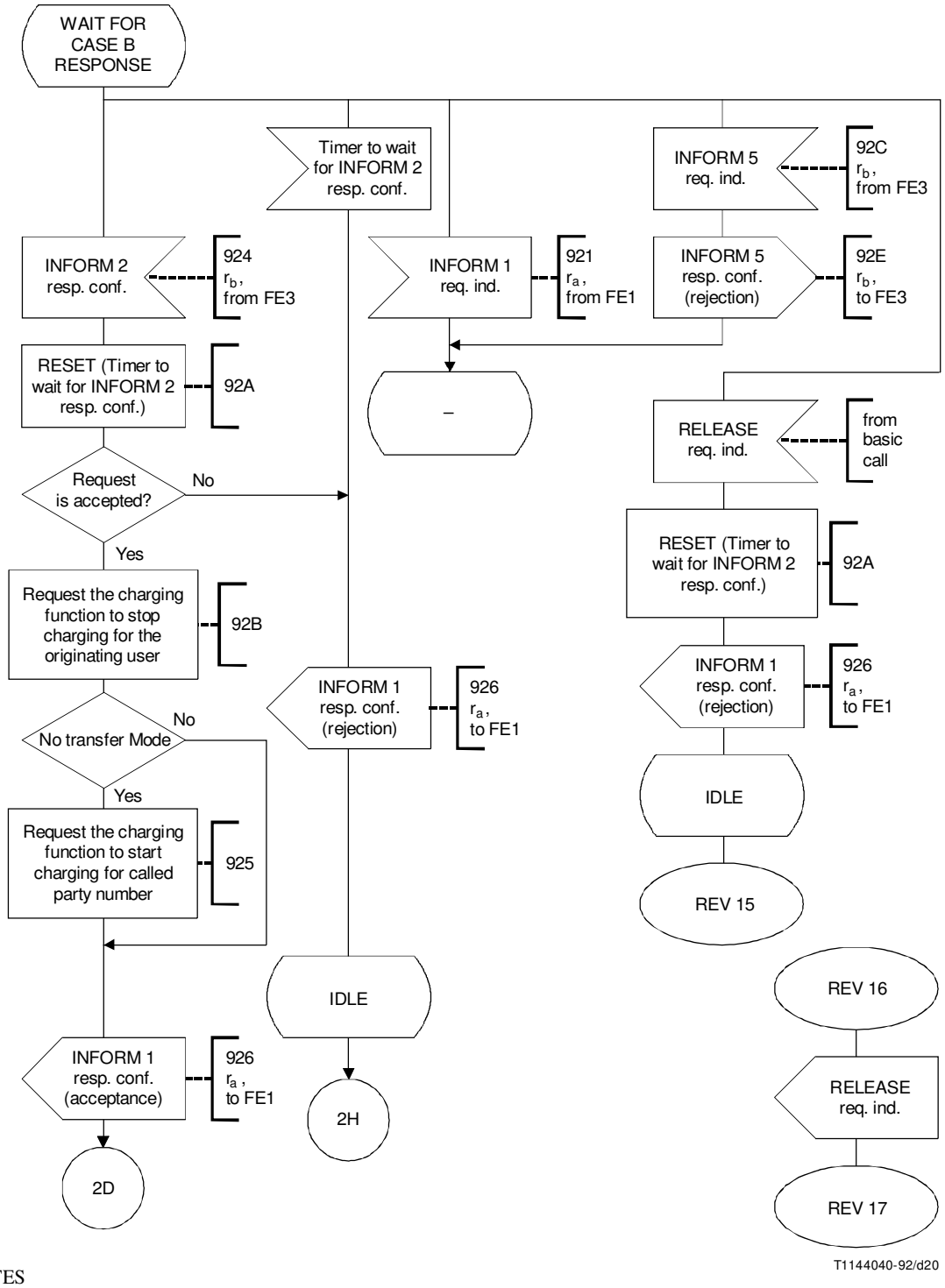
REV. FE2



NOTE – REV 13 and REV 14 break the basic call between S2/REV 1 and S2/REV 2 (see Recommendation Q.71[4]), in the case of Case B or Case C.

FIGURE 3-16/Q.86 (sheet 4 of 8)

REV. FE2



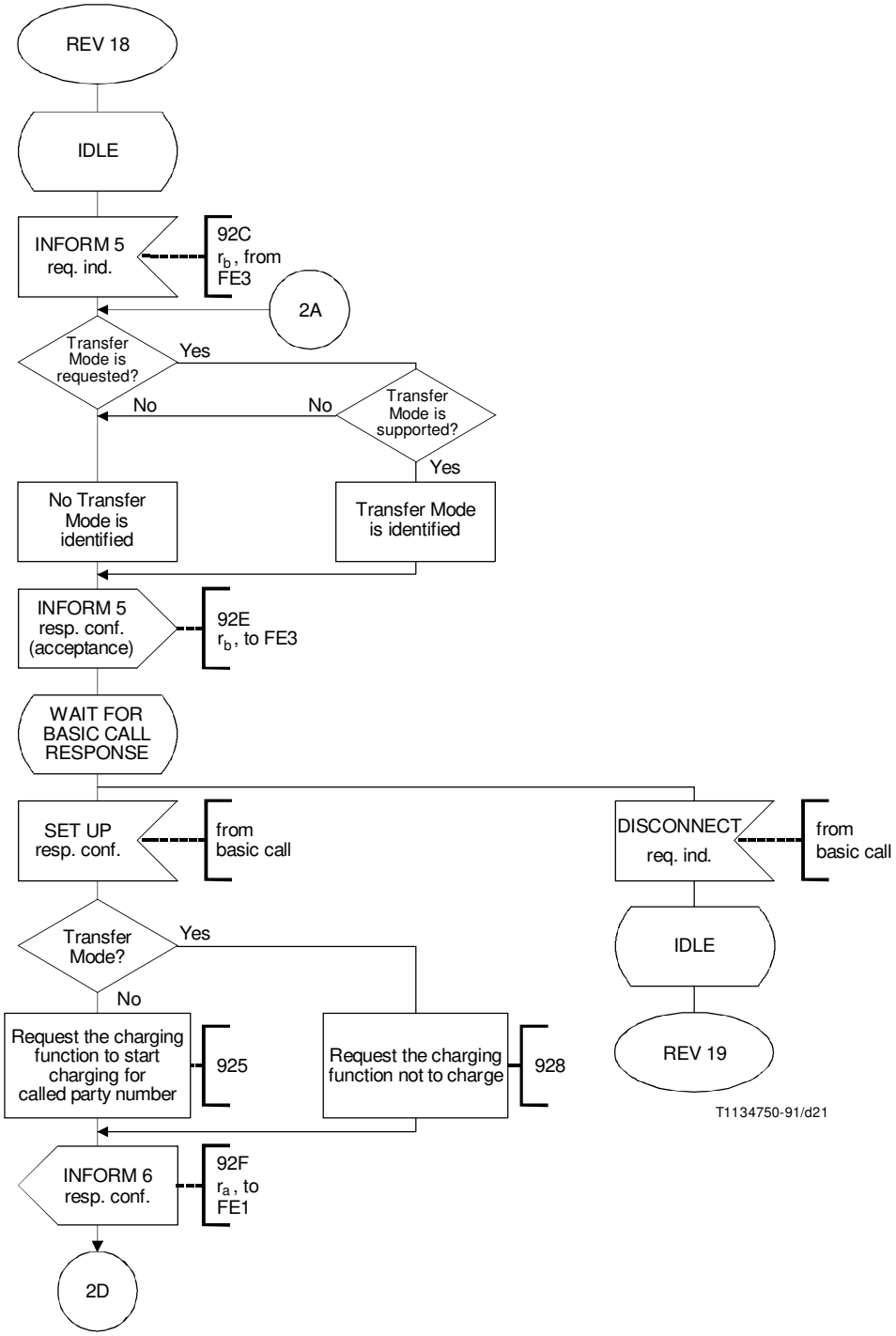
NOTES

1 REV 15 is connected to the basic call connector S2/24 (see Recommendation Q.71 [4]), in the case of Case B response (rejection).

2 REV 16 and REV 17 break the basic call transition between connectors S2/23 and S2/24 (see Recommendation Q.71 [4]), in the case of Case B response (rejection).

FIGURE 3-16/Q.86 (sheet 5 of 8)

REV. FE2



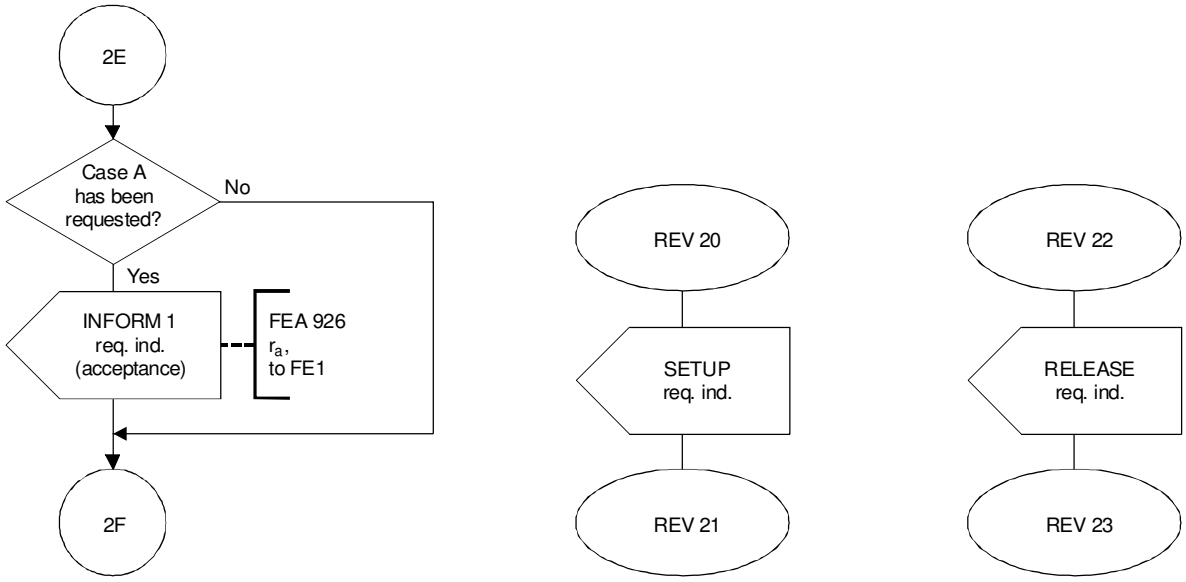
NOTES

1 REV 18 is connected to the basic call connectors S2/40 or S2/42 (see Recommendation Q.71 [4]), in the case of Case D.

2 REV 19 is reconnected to the basic call connectors S2/44 or S2/46 (see Recommendation Q.71 [4]), in the case of Case D.

FIGURE 3-16/Q.86 (sheet 6 of 8)

REV. FE2



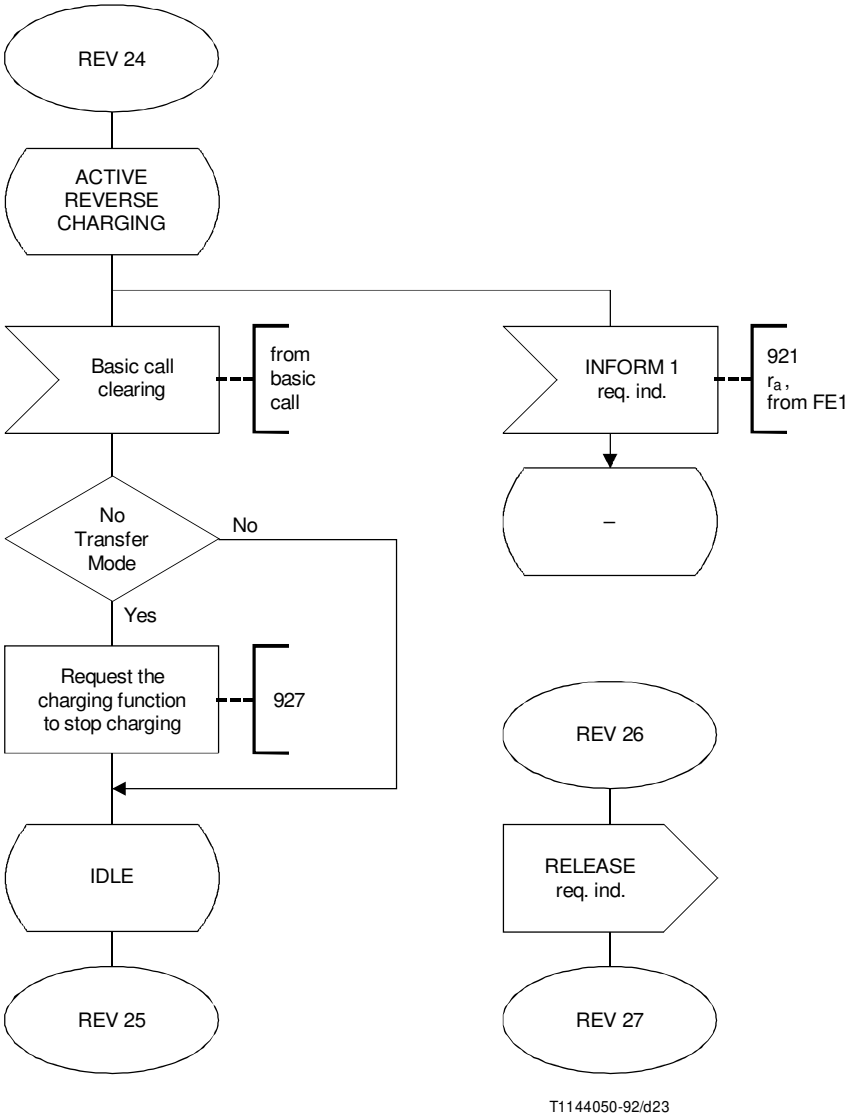
NOTES

1 REV 20 and REV 21 break the basic call transition between connectors S2/25 and S2/26, or S2/27 and S2/28 (see Recommendation Q.71 [4]), in the case of Case D.

2 REV 22 and REV 23 break the basic call transition between connectors S2/43 or S2/44, or S2/45 and S2/46 (see Recommendation Q.71 [4]), in the case of Case D.

FIGURE 3-16/Q.86 (sheet 7 of 8)

REV. FE2



NOTES

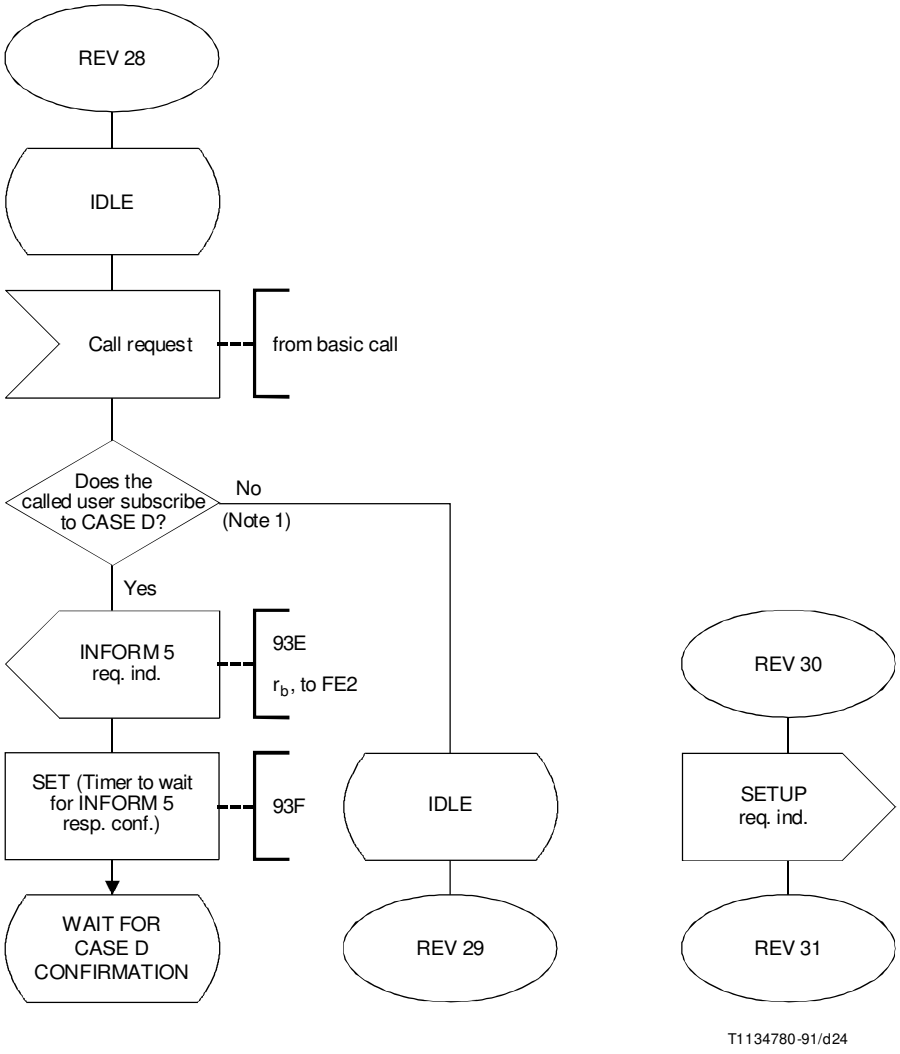
1 REV 24 is connected to the basic call connectors S2/REV 1 (see Recommendation Q.71 [4]).

2 REV 25 is reconnected to the basic call connectors S2/22 or S2/24 (see Recommendation Q.71 [4]).

3 REV 26 and REV 27 break the basic call between connectors S2/21 and S2/22, or S2/23 and S2/24 (see Recommendation Q.71 [4]).

FIGURE 3-16/Q.86 (sheet 8 of 8)

REV. FE2



NOTES

1 The subscription check for Case D should be taken at first when a call request is received from basic control.

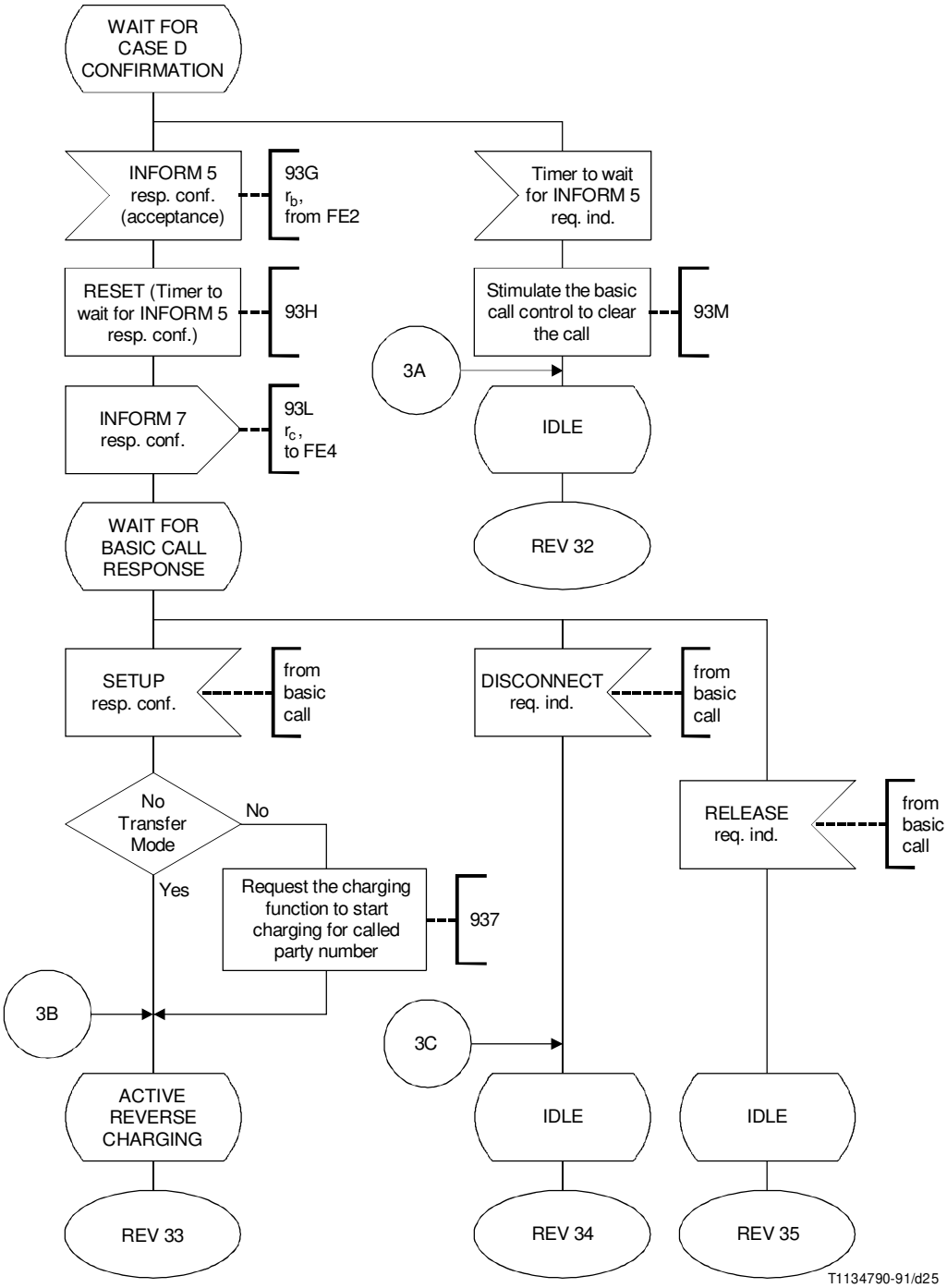
2 REV 28 is connected to the basic call connector S4/3 (see Recommendation Q.71 [4]).

3 REV 29 is reconnected to the basic call connector S4/4 (see Recommendation Q.71 [4]).

4 REV 30 and REV 31 break the basic call transition between connectors S4/3 and S4/4 (see Recommendation Q.71 [4]).

FIGURE 3-17/Q.86 (sheet 1 of 12)

REV. FE3



NOTES

1 REV 32 is reconnected to the basic call connector S4/2 (see Recommendation Q.71 [4]).

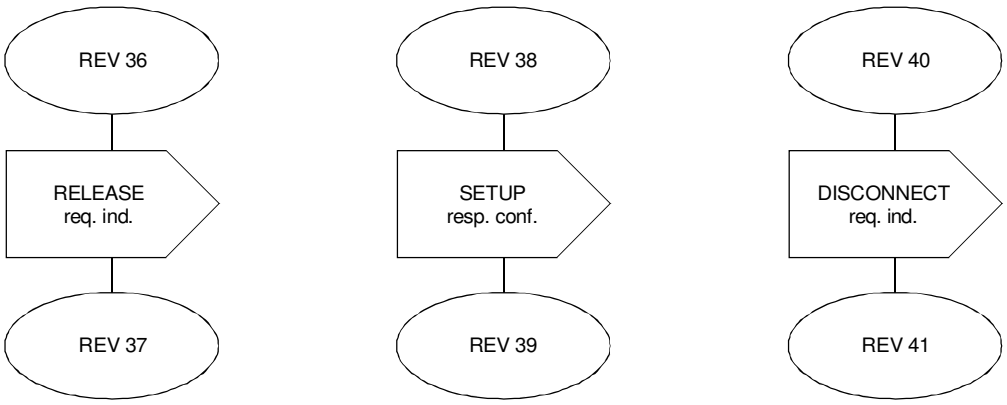
2 REV 33 is reconnected to the basic call connector S4/20 (see Recommendation Q.71 [4]).

3 REV 34 is reconnected to the basic call S4/REV 2 (see Recommendation Q.71 [4]).

4 REV 35 is reconnected to the basic call connector S4/10 (see Recommendation Q.71 [4]).

FIGURE 3-17/Q.86 (sheet 2 of 12)

REV. FE3



NOTES

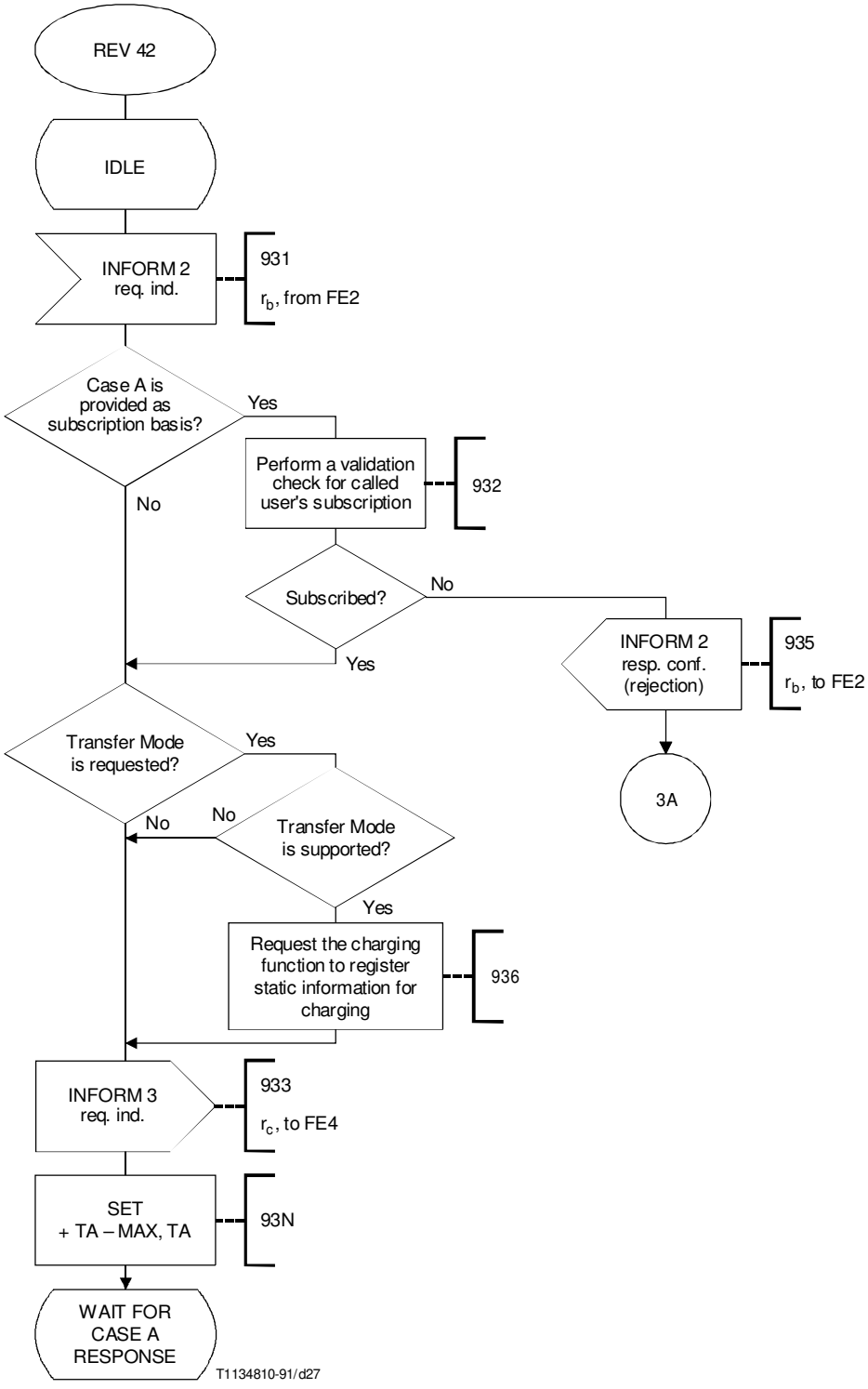
1 REV 36 and REV 37 break the basic call transition between connectors S4/9 and S4/10 (see Recommendation Q.71 [4]).

2 REV 38 and REV 39 break the basic call transition between connectors S4/19 and S4/20 (see Recommendation Q.71 [4]).

3 REV 39 and REV 40 break the basic call transition between connectors S4/REV 1 and S4/REV 2 (see Recommendation Q.71 [4]).

FIGURE 3-17/Q.86 (sheet 3 of 12)

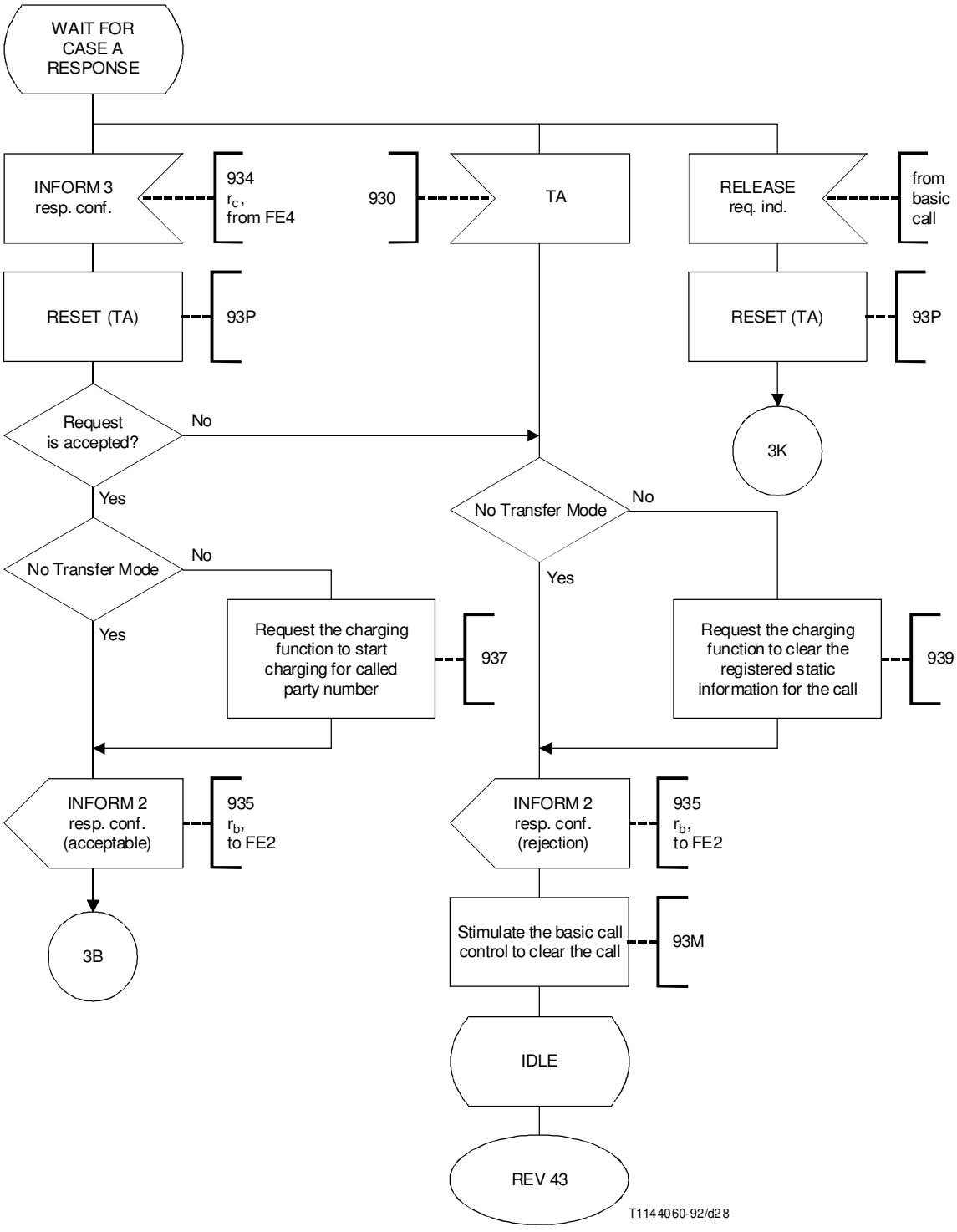
REV. FE3



NOTE – REV 42 is connected to the basic call connector S4/3 (see Recommendation Q.71 [4]), in the case of Case A request or Case D.

FIGURE 3-17/Q.86 (sheet 4 of 12)

REV. FE3



NOTE – REV 43 is reconnected to the basic call connector S4/18 (see Recommendation Q.71 [4]).

FIGURE 3-17/Q.86 (sheet 5 of 12)

REV. FE3

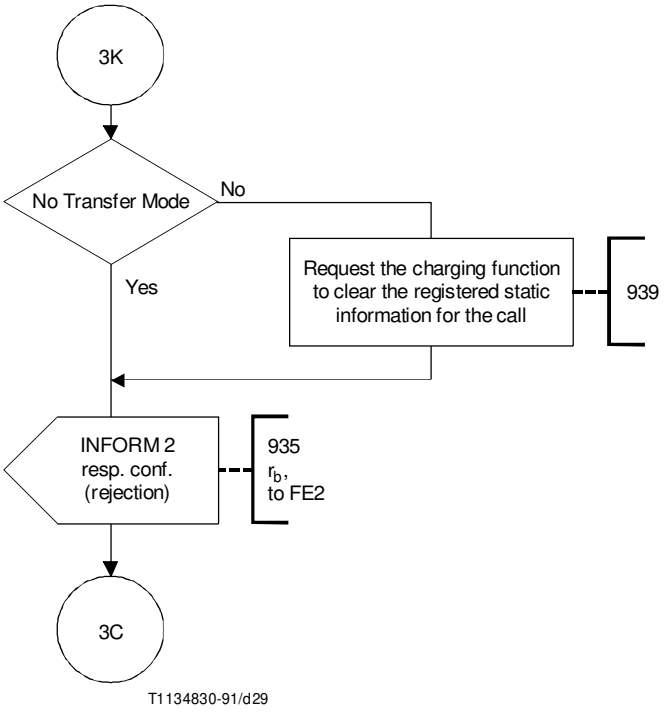
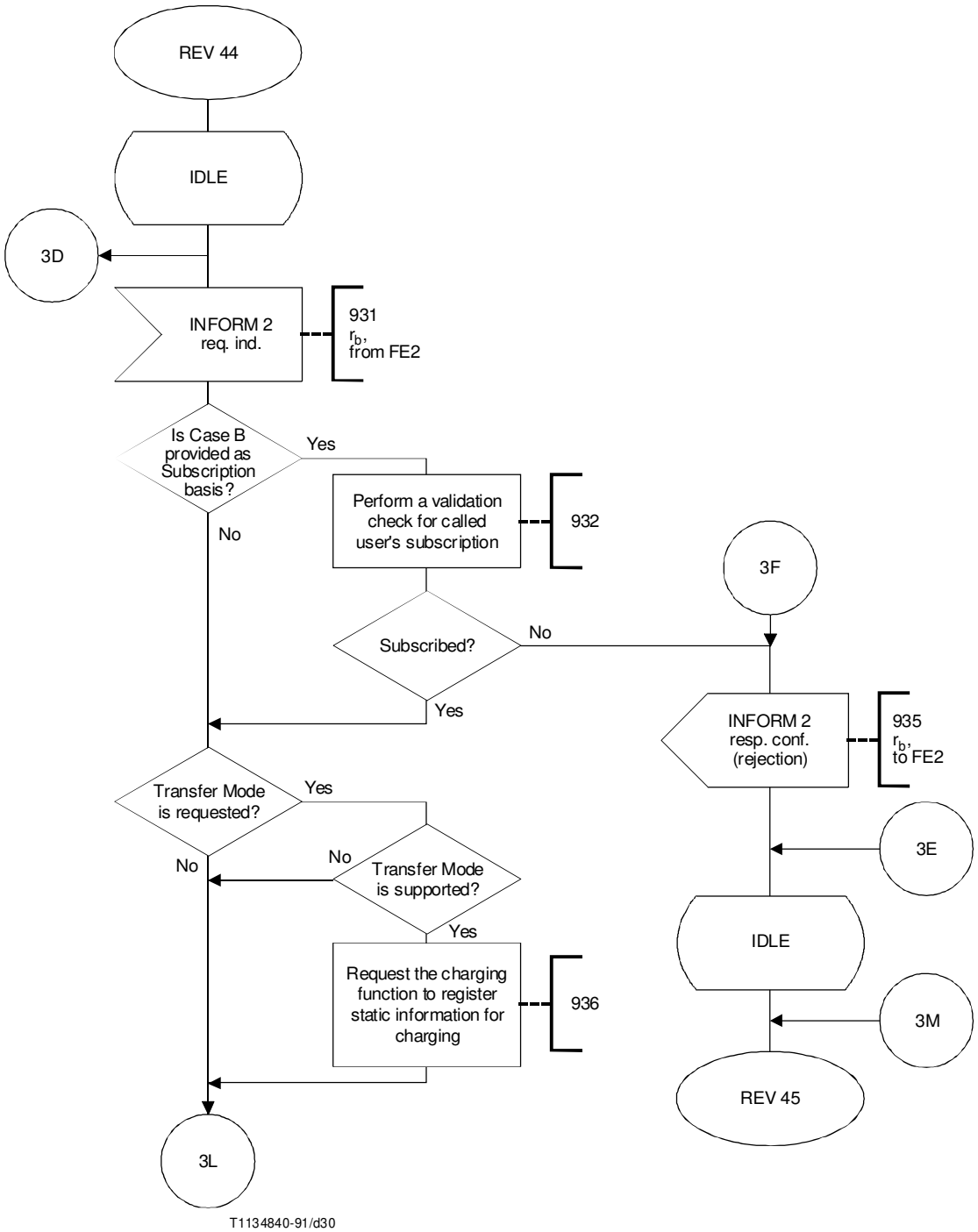


FIGURE 3-17/Q.86 (sheet 6 of 12)

REV. FE3



NOTE – REV 44 and REV 45 break the basic call transition between connectors S4/REV 3 and S4/REV 4 (see Recommendation Q.71 [4]), in the case of Case B request.

FIGURE 3-17/Q.86 (sheet 7 of 12)

REV. FE3

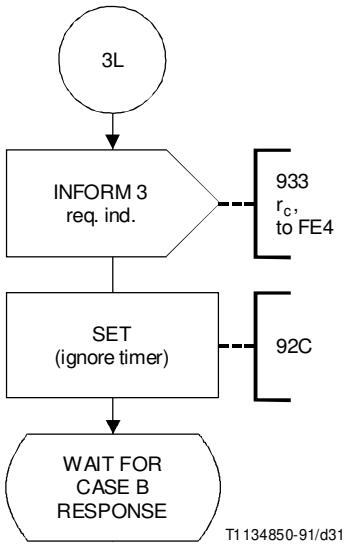


FIGURE 3-17/Q.86 (sheet 8 of 12)

REV. FE3

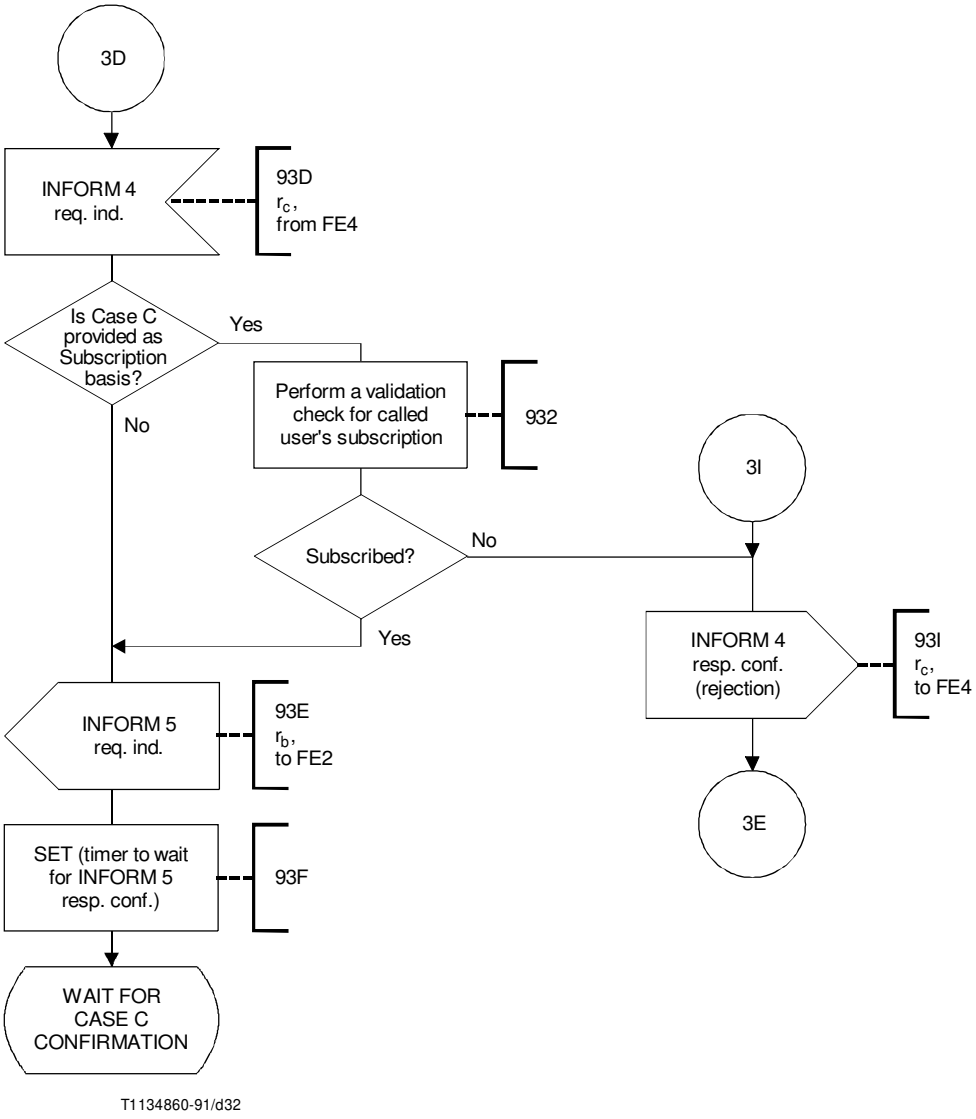
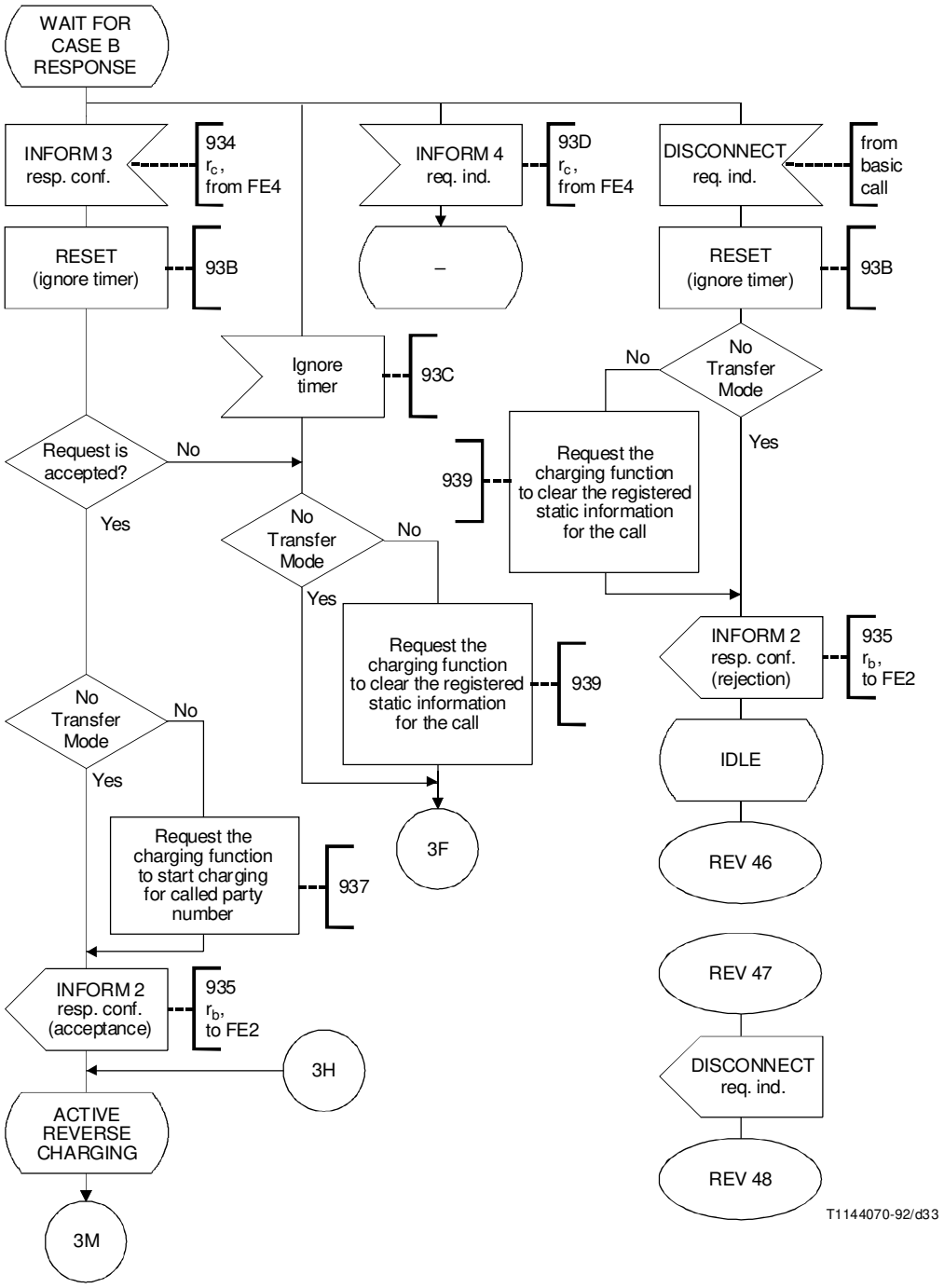


FIGURE 3-17/Q.86 (sheet 9 of 12)

REV. FE3



NOTES

1 REV 46 is reconnected to the basic call connector S4/8 (see Recommendation Q.71 [4]), in the case of Case B response.

2 REV 47 and REV 48 break the basic call transition between connectors S4/7 and S4/8 (see Recommendation Q.71 [4]).

FIGURE 3-17/Q.86 (sheet 10 of 12)

REV. FE3

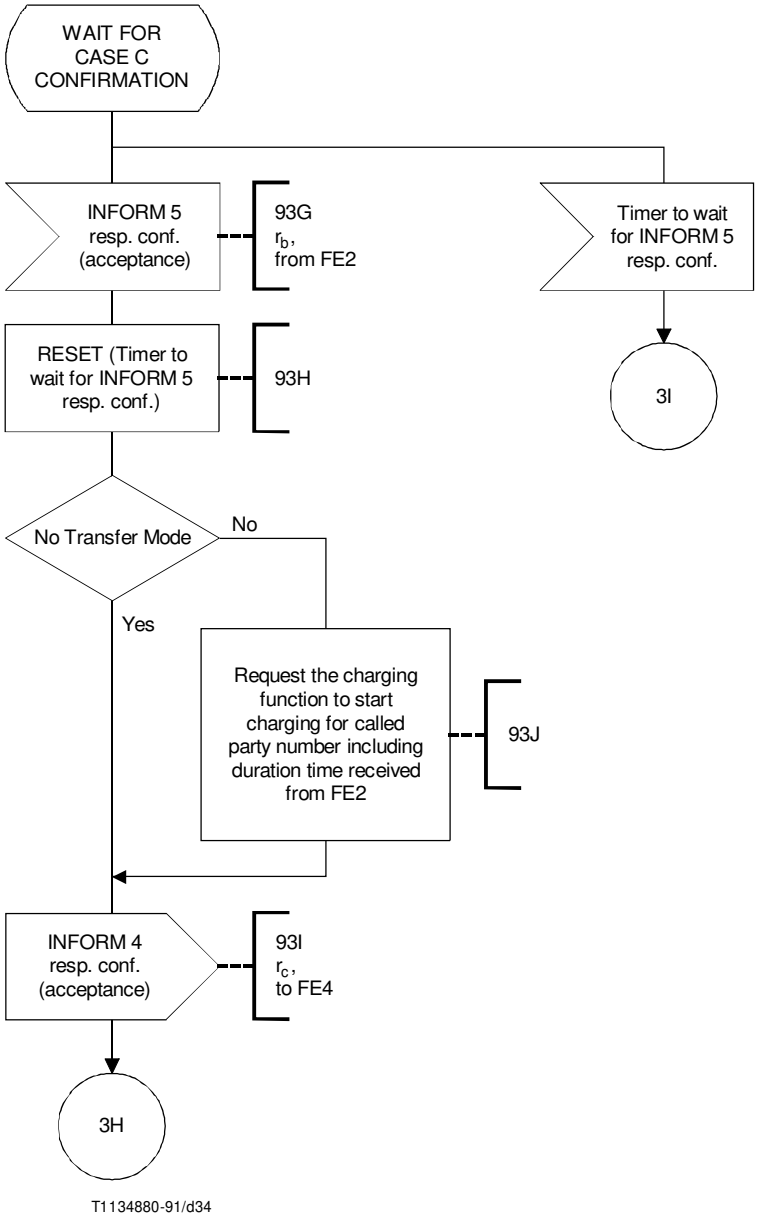
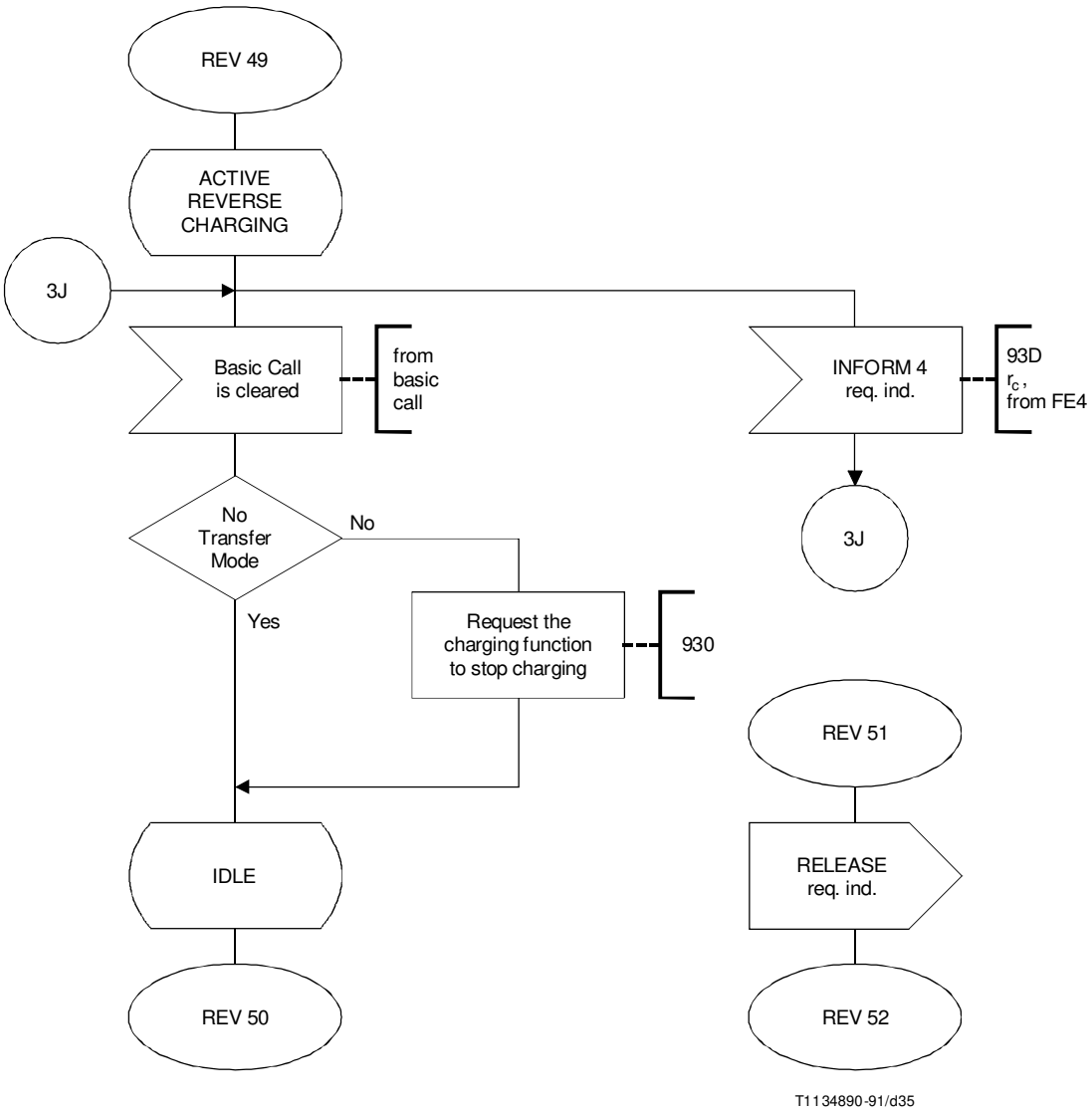


FIGURE 3-17/Q.86 (sheet 11 of 12)

REV. FE3



NOTES

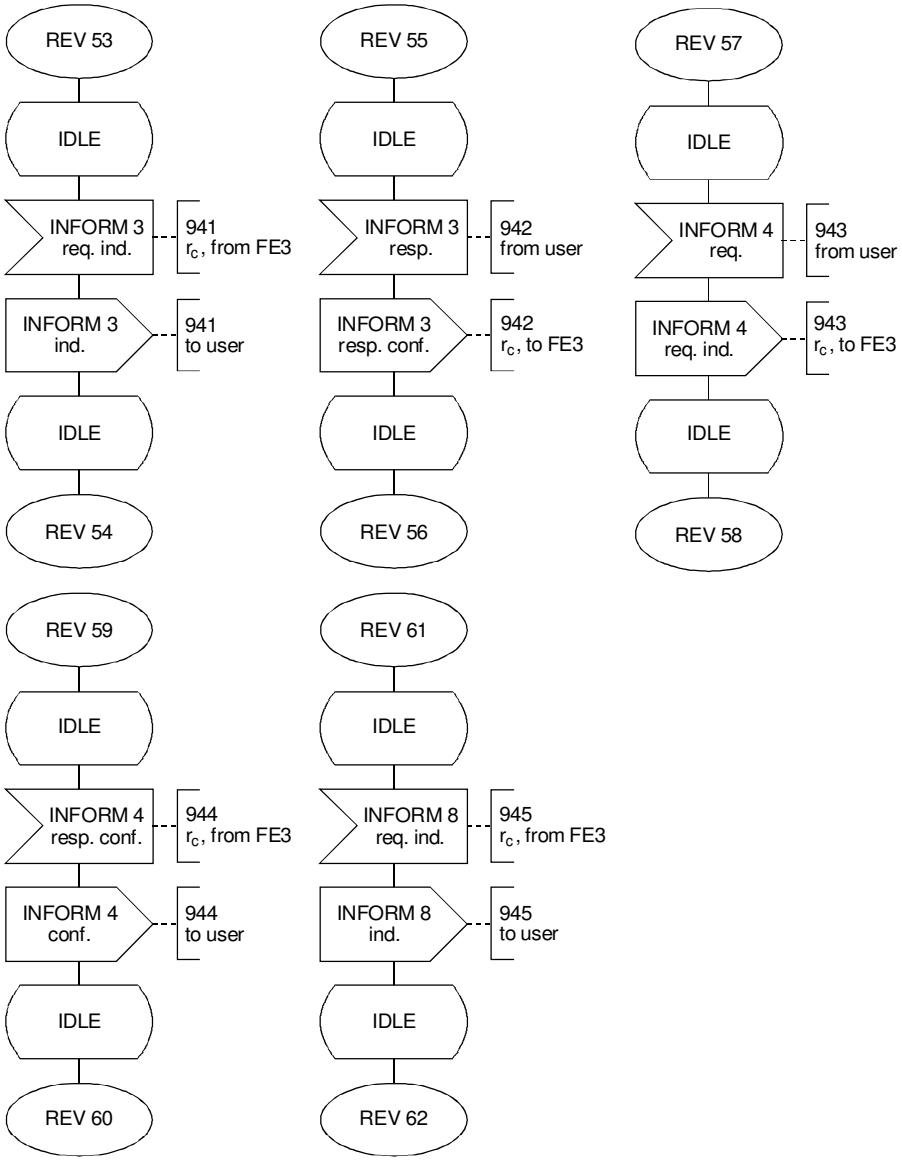
1 REV 49 is connected to the basic call connector S4/REV 3 (see Recommendation Q.71 [4]).

2 REV 50 is reconnected to the basic call connectors S4/12 or S4/8 (see Recommendation Q.71 [4]).

3 REV 51 and REV 52 break the basic call transition between connectors S4/11 and S4/12 (see Recommendation Q.71 [4]).

FIGURE 3-17/Q.86 (sheet 12 of 12)

REV. FE3



NOTES

1 REV 53 and REV 54:

a) break the basic call transition between connectors S5/1 and S5/2 (see Recommendation Q.71 [4]);

b) break the basic call between connectors S5/REV 1 and S5/REV 2 (see Recommendation Q.71 [4]).

2 REV 55 and REV 56:

a) break the basic call transition between connectors S5/4 and S5/5 (see Recommendation Q.71 [4]).

b) break the basic call between connectors S5/REV 1 and S5/REV 2 (see Recommendation Q.71 [4]).

3 REV 57 and REV 58 break the basic call between connectors S5/REV 1 and S5/REV 2 (see Recommendation Q.71 [4]).

4 REV 59 and REV 60 break the basic call between connectors S5/REV 1 and S5/REV 2 (see Recommendation Q.71 [4]).

5 REV 61 and REV 62 break the basic call between connectors S5/1 and S5/2 (see Recommendation Q.71 [4]).

FIGURE 3-18/Q.86

REV. FE4

3.9 Functional entity actions (FEAs)

3.9.1 FEAs of FE1

911: FE1 shall receive INFORM 1 req. (request for Reverse Charging) from user and send INFORM 1 req. ind. (request for Reverse Charging) to FE2.

912: FE1 shall receive INFORM 1 resp. conf. (response for Reverse Charging request) from FE2 and indicate it to the originating user.

913: FE1 shall receive INFORM 6 (Reverse Charging notification) from FE2 and indicate it to the originating user.

3.9.2 FEAs of FE2

921: FE2 shall receive INFORM 1 req. ind. (request for Reverse Charging) from FE1.

922: FE2 shall request the charging function to register static information for charging including called party number.

923: FE2 shall send INFORM 2 req. ind. (request for Reverse Charging control including appropriate information) to FE3.

924: FE2 shall receive INFORM 2 resp. conf. (response for Reverse Charging control request) from FE3.

925: FE2 shall request the charging function to start charging for called party number.

926: FE2 shall send INFORM 1 resp. conf. (response for Reverse Charging request) to FE1.

927: On receipt of basic call clearing, FE2 shall request the charging function to stop charging.

928: FE2 shall request the charging function not to charge.

929: FE2 shall request the charging function to clear the registered static information for the call.

920: FE2 shall set the timer to wait for INFORM 2 resp. conf. (response for Reverse Charging control request for Case B).

92A: FE2 shall reset the timer to wait for INFORM 2 resp. conf. (response for Reverse Charging control request for Case B).

92B: FE2 shall request the charging function to stop charging for the originating user.

92C: FE2 shall receive INFORM 5 req. ind. (request for Reverse Charging control) from FE3.

92D: FE2 shall request the charging function to change the charged user from the originating user to destination user.

92E: FE2 shall send INFORM 5 resp. conf. (response for Reverse Charging control request including appropriate information) to FE3.

92F: FE2 shall send INFORM 6 (Reverse Charging notification) to FE1.

92G: FE2 shall request the charging function to clear the charging for originating user.

92H: FE2 shall stimulate the basic call control to clear the call.

92I: FE2 shall set the timer to wait for Case A response.

92J: FE2 shall reset the timer to wait for Case A response.

3.9.3 FEAs of FE3

931: FE3 shall receive INFORM 2 req. ind. (request for Reverse Charging control) from FE2.

932: FE3 shall perform a validation check for called user's subscription when the service is provided by subscription basis.

NOTE – In case of no subscription basis, this validation check is not necessary.

933: FE3 shall send INFORM 3 req. ind. (request for Reverse Charging) to FE4.

934: FE3 shall receive INFORM 3 resp. conf. (response for Reverse Charging request) from FE4.

935: FE3 shall send INFORM 2 resp. conf. (response for Reverse Charging control request including appropriate information) to FE2.

936: FE3 shall request the charging function to register static information for charging.

937: FE3 shall request the charging function to start charging for called party number.

938: On receipt of basic call clearing, FE3 shall request the charging function to stop charging.

939: FE3 shall request the charging function to clear the registered static information for the call.

930: FE3 shall recognize TA is expired.

93A: FE3 shall set the ignore timer for the destination user.

93B: FE3 shall reset the ignore timer for the destination user.

93C: FE3 shall recognize and ignore timer is expired.

93D: FE3 shall receive INFORM 4 req. ind. (request for Reverse Charging) from FE4.

93E: FE3 shall send INFORM 5 req. ind. (request for Reverse Charging control including appropriate information) to FE2.

93F: FE3 shall set the timer to wait for INFORM 5 (response for Reverse Charging control request).

93G: FE3 shall receive INFORM 5 resp. conf. (response for Reverse Charging control request) from FE2.

93H: FE3 shall reset the timer to wait for INFORM 5 resp. conf. (response for Reverse Charging control request).

93I: FE3 shall send INFORM 4 resp. conf. (response for Reverse Charging request) to FE4.

93J: FE3 shall request the charging function to start charging for the destination user including duration time received from FE2.

93L: FE3 shall send INFORM 7 (Reverse Charging notification) to FE4.

93M: FE3 shall stimulate the basic call control to clear the call.

93N: FE3 shall set the timer to wait for Case A response.

93P: FE3 shall reset the timer to wait for Case A response.

3.9.4 FEAs of FE4

941: FE4 shall receive INFORM 3 req. ind. (request for Reverse Charging) from FE3 and indicate it to the destination user.

942: FE4 shall receive INFORM 3 resp. from user, and send INFORM 3 resp. conf. (response for Reverse Charging request) to FE3.

943: FE4 shall receive INFORM 4 req. from user, and send INFORM 4 req. ind. (request for Reverse Charging) to FE3.

944: FE4 shall receive INFORM 4 resp. conf. (response for Reverse Charging request) from FE3 and indicate it to the destination user.

945: FE4 shall receive INFORM 7 req. ind. (Reverse Charging notification) from FE3 and indicate it to the destination user.

3.10 Allocation of functional entities to physical locations

The allocations of functional entities for the Reverse Charging supplementary service are shown in Table 3-10.

TABLE 3-10/Q.86

Allocation of functional entities

Scenario	FE1	FE2	FE3	FE4
1	TE	LE	LE	TE
2	PNX	LE	LE	TE
3	TE	LE	LE	PNX
4	PNX	LE	LE	PNX
5	TE	TR	TR	TE
6	PNX	TR	TR	TE
7	TE	TR	TR	PNX
8	PNX	TR	TR	PNX
9	TE	TR	LE	TE
10	PNX	TR	LE	TE
11	TE	TR	LE	PNX
12	PNX	TR	LE	PNX
13	TE	LE	TR	TE
14	PNX	LE	TR	TE
15	TE	LE	TR	PNX
16	PNX	LE	TR	PNX

TE User Terminal Equipment
PNX Private Network Exchange
LE Local Exchange
TR Transit Exchange

Appendix I

(to Recommendation Q.86, clause 3)

Interworking requirement

(This appendix does not form an integral of this Recommendation)

I.1 Interworking of Reverse Charging with PSTN

Interworking of Reverse Charging with PSTN are applicable where appropriate procedures are supported by the PSTN for the cases shown in Table I.1.

TABLE I.1/Q.86

Interworking with PSTN

Case	ISDN → ISDN	PSTN → ISDN	ISDN → PSTN
A	V	V	V
B	V		
C	V		
D	V	V	

V Applicable

NOTE – Both the appropriate network functions (FE2/FE3) and signalling functions may be added into either the PSTN or interworking point in order to cover the above described requirements.